IRON AND COAL
TRADES REVIEW

Vol. 181 December 9, 1960 No. 4,821

Selling Capital Goods Abroad

BRITISH engineering companies have a long tradition of oversea sales, dating from the extension of the Industrial Revolution to other countries. A demand arose abroad for steam generating plant and textile machinery which British manufacturers were quick to observe and equipped to meet. Opportunities followed to sell to oversea countries railway locomotives and rolling stock, tramway systems, power stations, and a diversity of plant and equipment for the expanding steel, paper, chemical, and rubber industries. This tradition has persisted in spite of the intervention of two world wars. Will it continue? This question was asked at a "Selling Capital Goods" conference held at Harrogate recently by the British Institute of Management, and was answered by Dr. J. G. Mackay in a paper entitled "The Future Demand for Capital Goods Oversea."

It is gratifying to note that the author is optimistic about Britain's prospects in this field. He was able to point out that engineering products account for 30 per cent. of our exports today. Many engineering companies send more than 50 per cent. of their production oversea. Whereas export sales of many consumer goods are now shrinking, export order-books in the engineering and electrical industries are still well filled.

We are warned, however, of the dangers of complacency. Percentage figures of goods sent abroad in relation to production do not tell the whole story. Demand for engineering goods in oversea markets has expanded, and the true indication of British progress is to be found in the percentages of these markets filled by United Kingdom products. Dr. Mackay presents a table listing by value the exports of machinery and electrical apparatus by the principal exporting countries in the four years 1956-59. All countries show an advance in trade with the exception of the United States, which in 1959 accounted for 31.8 per cent. of the total, against 36.9 per cent. in 1956. Percentage-wise, Western Germany has made the greatest advance, and to the intensive competition which Germany is putting up in all markets British exporters may expect to see added from now on a drive by the United States to recover lost ground. America is becoming increasingly concerned about the dollar balance, and may be expected to combine efforts to cut down her imports with an all-out endeavour to expand her exports.

Dr. Mackay remarks in his paper on the challenge to Britain which Western Germany is making in Commonwealth markets for machinery and electrical equipment. This competition is particularly marked in respect to India, Australia, and South Africa. He points out, too, that Britain has not received her share of trade in the rapidly expanding economy of countries within the European Common Market, underlining, by implication, the importance of the Outer Seven markets. In statistical surveys of the Eastern European, South American, and other markets, Dr. Mackay illustrates the drive which Western Germany has made to expand her machinery sales.

While Dr. Mackay is not pessimistic about British prospects, he is at pains to point out that there is no easy road to success in selling capital goods abroad in the long term. "Hard selling" of the right product at the right price with reasonable delivery is an essential. But in the author's view fundamental changes in Government policy are also required if exports of capital goods are to be substantially expanded. The ability to offer attractive terms of payment is an important factor in securing large orders from oversea countries, and it is suggested that the Government might help exporters by easing the conditions of the Bankers' Guarantee Addendum to ECGD policies. Dr. Mackay also insists that taxation must be reduced. The process industries must be left with more cash after tax to "plough back" into more modern plant. If a general reduction of taxation can only be made slowly, then industry must be provided with additional incentive for re-equipment. He says that a major factor in the post-war recovery of German industry has been the generous policy on depreciation allowances followed by successive German Governments.

Overriding everything in importance is the home market. Dr. Mackay complains of policy fluctuation in attempting to control industrial activity by financial means. The consumer goods industries are our home market and relaxation followed by re-imposition of restrictions on those industries does little to help manufacturers of capital goods. We cannot base the expansion and modernization of our engineering shops upon exports only, with a home market that fluctuates wildly. To preserve our exports, particularly to oversea territories where there is local manufacture, we must keep ahead in design, in quality, and in the adaptation of our machines to new processes, but what we offer must be well proven in service before it is sent oversea. To do this we must have a healthy home market.

Spain Praises British Plant

SUPPLIED by Head, Wrightson & Company, Limited, nearly three years ago, the No. 1 blast furnace at the Spanish State steelworks at Avilés, recently completed its first 1,000,000 tons of hot metal. The furnace, named "Carmen," is now producing an average of 35,000 tons of liquid iron a month. The iron is fed to a pig casting machine, commissioned at the same time as the furnace.

The casting machine has produced during three years an average of 14,000 tons a day and absorbed alone the production from the No. 1 furnace at the time when the steel furnaces were not in operation. When the second blast furnace came into operation the pig casting machine had to take an increased load. The authorities in Spain say the machine continues to give inestimable service despite the heavy calls made upon it.

Head Wrightson have now almost completed their work at the Spanish steelworks with the commissioning of the second sinter plant.

New Sinter Plant at Workington

DESIGNED to produce 12,500 tons of self-fluxing sinter per week ultimately, the new £2,500,000 single-strand continuous sinter plant installed by the Workington Iron & Steel Company was officially opened by Crown Prince Harald of Norway on Tuesday.

The plant uses ore mined at Kirkenes, in the far north of Norway. The ore is shipped in the form of a powdered concentrate containing 65 per cent. of iron.

FBI Oversea Director's Advice

ACCORDING to Mr. Peter Tennant, oversea director of the Federation of British Industries, this country should be "less worried about political and economic instability." Mr. Tennant has just returned from a tour of Yugoslavia, Pakistan, Persia, Iraq, Afghanistan, Kuwait, Bahrein, and the Trucial States.

His conclusions include the following points: In Pakistan it was "most encouraging" to see how UK concerns had joined in the drive to develop industry, but the textile machinery market here was facing severe competition from Japan and the Continent.

Trade with Afghanistan was very small and in deficit with £3,000,000 UK imports yearly to only £500,000 exports. In Persia, UK industry had "not got the share it ought to have." The Yugoslavs would like to see the UK taking a "more enterprising" view of their market. The steel industry had achieved "much closer contacts" with potential Yugoslav customers and other industries should follow their example.

TO INCREASE PRODUCTION Francis B. Wilmott, Limited, manufacturers of gears, press tools, and pressings, of Birmingham, has introduced an output award. It will be calculated every four weeks and will be based on earnings above normal wages.

Passing Thoughts . . .

THE whole subject of exports is so complex and difficult that it is not possible to offer a simple and certain way to improve it, for a general course of action which will help some industries will hinder others. It might help for every section of industry to have its own export action group with its own co-operative policy geared to the long-term policy of the Government. Several hundreds of such groups might do much to tackle the multitude of difficulties. —MR. A. W. MOSS, chairman and managing director of H. Frost & Company, manufacturing electrical engineers, of Walsall (Staffs) in a letter to the Financial Times.

> *Do not claim "extra-territorial rights" but place your business right inside the national community; try to find suitable national partners who will take a share in the capital of your business; and aim at employing nationals at all levels of your business.—Advice to international businessmen and investors by* PROF. PIETER KUIN, *of the International Chamber of Commerce's commission on foreign investments and economic development.*

If we are to speed up our efforts to become still more competitive, some help most surely will have to be given to industry in taxation relief by means, for example, of increased depreciation allowances on capital invested in productive equipment and investments in new buildings. If the Government could make it possible for industry to invest in an increasing degree of mechanization, to apply more horse-power and less manpower to increase productivity, then we should be in a better position to meet world competition.—MR. LESLIE W. FARRER, chairman of the Villiers Engineering Company, Limited, in his annual report to shareholders.

> *Scientific management is based on practices which include ensuring that men derive satisfaction as well as food from their daily work. Management in this country can be said to have secured its largest failure in this direction.*—MR. H. P. BARKER, *chairman of the British Institute of Management, speaking in Glasgow.*

I shall not hesitate to use every weapon in the armoury to carve out and hold this target [of 200,000,000 tons a year] which I so fervently believe to be in the interests of the coal industry and of the nation.—MR. ALFRED ROBENS, Chairman-designate of the National Coal Board.

> *A Merry Christmas and a very cold New Year. —Chairman's seasonal greeting to members of the Coal Industry Society.*

Umbrellas are Going Up

IT had to come! The United Steel Companies, Limited, reports that this year its subsidiary, Samuel Fox & Company, Limited, is turning out 50 gross of umbrella frames a week. Last year it was 30 per cent. fewer. The United Steel Companies says: "There seems to be a happy conspiracy of events ensuring the continued prosperity of this veteran of the steel trade." It is 108 years since Samuel Fox perfected his frame.

Mr. M. F. Stuart-King, manager of the Samuel Fox umbrella frame department, suggests the umbrella is more elegant than the plastics makintosh and lasts longer.

RTB "REFUSED" FACTS

Peer's Allegation Over Ironstone Inquiry

FOLLOWING complaint by Lord Lucas that the Iron and Steel Board and Richard Thomas & Baldwins (Mineral Recoveries), Limited, had "refused to give information vital to the proper prosecution of the objectors' case" at the recent inquiry at Banbury into proposals for ironstone working in north Oxfordshire, the Lord Chancellor, Viscount Kilmuir, undertook in the Lords last week to consider whether allegations of unfairness at the inquiry justified his referring them to the Council on Tribunals.

The Lord Chancellor said he would consult the Ministers concerned in the matter. The report of the inquiry had not yet been received, and until it had he would refrain from making any comment on the conduct of the inquiry.

Lord Lucas, asking that the circumstances of the inquiry should be referred to the Council on Tribunals, said he sought to establish a *prima facie* case for a full investigation, to see whether this particular inquiry was in accord with the precept of the Franks Committee, accepted by the Government, that statutory inquiries should be based on openness, fairness, and impartiality.

Projected Steel Mill

Lord Lucas, who recalled that the inquiry was into an application by RTB to mine 4,700 acres for ironstone in north Oxfordshire, for the projected strip mill at Newport (Mon), said that although a Ministry circular laid down that objectors must be provided with the fullest possible information to conduct their cases properly, the applicants and the Iron and Steel Board refused to give any of the information vital to the proper presentation of the objectors' case.

"The inquiry ran from November 8 to November 18, and through the whole of that time counsel were protesting that they could not give any information. Nobody was to be put up for cross-examination and it was only by some clever work by counsel that some information was winkled out of those witnesses.

"One thing one of the witnesses said was that Richard Thomas & Baldwins had spent £2,000,000 already on the erection of this strip mill at Newport, specially designed because of the particular properties of Oxfordshire ore, and that unless they got planning permission then the whole of this money they had spent would be lost."

"You can imagine the furore that caused," said Lord Lucas, "but it was not true."

Lord Lucas recalled the statement by the Minister of Power, Mr. Richard Wood, in the Commons on Tuesday last week, that so far the company had spent £250.000 and was committed to a further £1,350,000, but that the plant could handle ore from other sources, and that if the decision went against the company it would incur very little nugatory expenditure. "Why," asked Lord Lucas, "did they allow false information to be given? Why was the inquiry ever allowed to proceed?"

Lord Salter, president of the Town and Country Planning Association, agreed with Lord Lucas that the inquiry was "grievously handicapped" by the extreme reticence of the applicants to give information that was essential for any real judgment. The applicants, he said, went so far as to say that it was their duty under a ruling of the Iron and Steel Board, some years ago, to exploit home ore right up to the point of an economic loss. The line taken by the applicants was such as to make the inquiry useless.

Lord Salter added: "I could not resist two impressions. One was that one of the main reasons why the applicants refused this information was that they were conscious themselves of the extreme weakness of their economic case. The other was that they wished to have direct control and ownership of the area from which they drew their home ore."

In a further exchange with Lord Lucas, the Lord Chancellor said that he was told that Richard Thomas & Baldwins and the Steel Board did supply information.

Lord Lucas agreed that "some information of a minor character" had been given, "but every piece of vital information was withheld"

The Lord Chancellor said that if new information were brought to the Minister's notice after the inquiry had concluded, which in his view might be a serious factor in his decision, he would give the parties the opportunity to comment and could, if necessary, reopen the inquiry.

Skilled Labour Problem for Staveley Coal & Iron

DIFFICULTY in finding skilled workers is holding up progress in the machine-tool companies in the Staveley Coal & Iron group, Mr. John P. Hunt, the chairman, stated at Wednesday's annual meeting in London. The companies have plenty of orders, but one of them, James Archdale & Company, Limited, of Birmingham, is over 300 men short.

Mr. Hunt said that with six months' trading completed, all companies in the group, except the two big machine-tool makers and the Canadian companies, had shown better results than at this time last year and "it would be reasonable to look forward to a further increase in profit."

Mr. Hunt added that the group intended to go on developing in the machine-tool trade if suitable opportunities occurred. The resolution was approved increasing the capital to £10,000,000 by the creation of 3,229,288 £1 shares.

DURING NOVEMBER, 85,435 tons of coal and 3,095 tons of coke were shipped through Garston Docks, Liverpool.

Board Changes

Top Management Changes at Ruston & Hornsby

JOINT managing director of Ruston & Hornsby, Limited, engineers, and steel and iron founders, of Lincoln, Mr. Geoffrey W. Bone, is to resign his appointment on December 31, 1960. He will continue as managing director of the associated company, Davey, Paxman & Company, Limited, and, as from January 1, 1961, will become vice-chairman of Ruston & Hornsby.

Mr. V. R. Prehn, who has been joint managing director with Mr. Bone, is to continue as sole managing director until December 31, 1961, when he will retire. The assistant managing director, Mr. C. T. Anderson, is to be appointed deputy managing director with effect from January 1, 1960, with the intention that he should progressively take executive control so that he may succeed Mr. Prehn as managing director.

POWELL DUFFRYN, LIMITED—Sir Thomas Overy has left the board.

ALFRED HERBERT, LIMITED—Mr. D. W. A. H. Allen has joined the board.

TRUSCON, LIMITED—Mr. H. T. Weeks, deputy-chairman, is resigning from the board on December 31.

MONSANTO CHEMICALS, LIMITED—Mr. John C. Garrels, Jnr., has joined the board and been elected deputy managing director.

OXFORDSHIRE IRONSTONE COMPANY, LIMITED—Sir Frederick Scopes has been appointed chairman in succession to Mr. C. R. Wheeler.

CROFTS (ENGINEERS), LIMITED—Further to the announcement in last week's issue of the appointment of four new directors, the company now states that these are sectional directorships.

COCKSEDGE & COMPANY, LIMITED—Mr. B. Smith has succeeded Mr. F. G. Laws as managing director. Mr. Laws remains chairman of the company and of the parent, Cocksedge (Holdings), Limited, with Mr. Smith as deputy-chairman of both companies.

WESTOOL, LIMITED—Mr. D. Riddell, chief engineer, Mr. D. L. Shand, works manager, and Mr. A. G. Why, secretary and accountant, have been appointed directors. Mr. G. R. Hook has resigned from the board after 41 years with the company. He was for many years managing director.

DISTINGTON ENGINEERING COMPANY, LIMITED, branch of the United Steel Companies, Limited—Mr. C. M. Slocombe has been appointed director of engineering with effect from April 1, 1961, and will relinquish his present post of director of engineering of Samuel Fox & Company, Limited, on August 31, 1961.

SANDVIK STEEL BAND CONVEYORS, LIMITED—Mr. V. C. Price has been appointed managing director to succeed Mr. Ernest Bealing, who held the post since 1946. Mr. Bealing is retiring, but will remain on the board. Mr. Price has been with the company for 13 years and in recent years has been responsible for sales.

MASSEY-FERGUSON (UNITED KINGDOM), LIMITED—Mr. Gilbert A. Hunt has been appointed managing director. He joins the company from the Hawker Siddeley Group, Limited, where for some years he has been director and general manager of High Duty Alloys, Limited. He has also joined the board of Massey-Ferguson Holdings, Limited.

ENGLISH ELECTRIC COMPANY, LIMITED—Sir Gordon Radley has been elected a director. He joined the boards of the subsidiaries, Marconi's Wireless Telegraph Company, Limited, Marconi Instruments, Limited, English Electric Valve Company, Limited, and Marconi International Marine Communication Company, Limited, in July, having retired as director-general of the General Post Office in May.

HALL & PICKLES, LIMITED—Mr. F. R. Robbins and Mr. A. M. C. Murphy have been appointed joint managing directors as from January 1. Mr. J. H. Russell is relinquishing his post as managing director for health reasons, but will remain on the board and on those of the parent, Hall Engineering (Holdings), Limited, and the subsidiary, Improved Metal Label Company, Limited. Mr. E. W. B. Davis will become general sales director.

PRESSED STEEL COMPANY, LIMITED—With the retirement on December 31 of Mr. W. E. Lambourn, his colleague, Mr. F. E. Cairns, becomes sole deputy managing director. Other appointments are:—Mr. R. Craig, senior executive director; Mr. R. N. Davies, group director of manufacturing and a director on the main board; Mr. S. C. E. Lewis, group supplies director and a local director; Mr. L. Long, deputy group director of manufacturing; Mr. S. A. J. Frampton, works manager, Cowley, and a director of the car body division; Mr. A. H. Pether, group tool manager and a director of the car body division.

Forest of Dean Group Colliery Manager to Retire

MANAGER of the Forest of Dean Group of collieries, South-Western Divisional Coal Board, since 1953, Mr. James Roy Tallis is to retire next month. He has been associated with coal mining in South Wales and Monmouthshire and in the Forest of Dean for 40 years.

Born in 1901, he was educated at Malvern and qualified for the Joint Diploma in Mining of the University College, Cardiff, and the School of Mines, Treforest. He was associated with the Tredegar Iron & Coal Company, Limited, as manager of McLaren Colliery and later held the position of colliery agent.

His first appointment under the NCB was that of colliery agent for the Tredegar Group. He was later appointed sub-Area production manager in the No. 1 (Swansea) Area in its original form, and then assistant Area production manager in No. 9 (Neath) Area before being appointed to the post he now holds.

Mr. Tallis has always been active in promoting the aims of the National Association of Colliery Managers; he was elected president of the South Wales branch for 1945-1946 and was the national president of the association for 1948-1949. While holding the latter position he was also one of the deputy chairmen of the National Consultative Council for the Mining Industry. He was a member of the council of the Institution of Mining Engineers and a member and past president of the South Wales Institute of Engineers. In recognition of his services as a founder member of the British Association of Colliery Management in South Wales he was appointed life president of the South Wales branch.

The South-Western Divisional Coal Board stated that for future purposes the Forest of Dean mines will be scheduled as part of the No. 6 (Monmouthshire) Area.

SIX-POINT POLICY

Mr. A. Robens Accepts Challenge to Coal

SIX-POINT policy for the coal industry during the next five years was outlined by Mr. Alfred Robens, chairman-designate of the National Coal Board, at a Coal Industry Society luncheon in London on Monday. In his speech he referred to the closure of pits and making miners redundant as "a shattering blow to the morale and confidence of the industry" and went on to pay a tribute to the present chairman of the board, Sir James Bowman, and his colleagues, that such a colossal change was made in "this vital industry with so little of the social consequences that could easily have flowed if an unwise course had been pursued."

Mr. Robens' six points were:—To make the industry pay its way; to provide a greater proportion of finance from its own resources for future investment; to ensure price stability and consistency of product.

MR. A. ROBENS

To provide security of employment and improving rewards for those employed directly and indirectly in the industry; to increase the emphasis on scientific and technical progress in both production and utilization of coal; and to improve the relations between the coal industry and Parliament, and the coal industry and the public. He was frequently told that his estimate for the size of the industry as about 200,000,000 tons a year was "very optimistic" and that general trends would not seem to show that this was a possibility.

Not a "Nice Round Figure"

"This figure of 200,000,000 tons is not one which I have plucked out of the air; it isn't a nice round figure." It was chosen for two reasons—because he believed it about right for the efficient and economic production of coal and about right in the interest of the nation. "For the first time," he said, "we are able to give the industry a fixed objective."

The Government had indicated that the fuel requirements of Britain by 1965 would be 300,000,000 tons of coal equivalent. He accepted the figure, but believed it would be reached nearer 1970; nevertheless 300,000,000 tons of coal equivalent would be required in this country within the next 10 years.

"I believe that on military, strategic, economic, and balance-of-payments grounds, two thirds of that total ought to come from our own indigenous resources," he declared.

"The tremendous value to the nation of developing coal resources is undeniable. Coal makes no ...ain on the balance of payments; it makes a tre...endous contribution in earning foreign currency. Despite the glut of coal in Europe, our sales there are forging ahead and this year we will have sold abroad about one third more coal than in 1959, a total export for the year of about 5,500,000 tons, which means a very substantial help to the balance of trade position.

"It is said that coal's greatest competitor—oil—is also a net earner. And it is, if you include the export of oil machinery. I do not seek to deny that, but I am certain of one thing, and that is that every ton of coal which is displaced by the importation of an equivalent amount of fuel oil is obviously to the detriment of our balance of payments position."

Mr. Robens noted that the oil companies had placed orders in the first nine months of this year to a total of £98,000,000 with British firms. In the last 10 years the Coal Board had spent on plant and materials with private enterprise nearly £2,500,000,000, an average of £250,000,000 a year.

"I wonder," he remarked, "if the suppliers to the coal industry are ready to join in the battle for coal. If so, they might look at what they, and their suppliers, are burning in their boilerhouses. Short-term gains could easily turn to long-term losses."

The country must aim to prevent any further contraction in the mining industry. Pits abandoned now because of the elimination of coal by oil meant pits lost for ever, and loss of confidence in the industry would prevent getting the new young men without whom the industry was doomed.

"Should any crisis arise in oil supplies, then it would be impossible to turn quickly back to coal," and Mr. Robens warned, "those who turn too lightly to oil, without weighing the consequences, must take responsibility for their own action, for they cannot expect existing customers of the board to be put at a disadvantage because they get into difficulties."

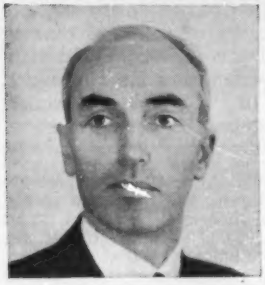
He concluded by saying that there was "a legitimate cheerfulness" in the coal industry today. Whereas over the past three years, productivity in industry as a whole had gone up by about 7 per cent., in the same period in coal-mining the increase had been 12 per cent. Stocks were being lifted from the ground in ever-increasing quantities. By the end of the year they were likely to have taken from stocks some 6,500,000 tons. Exports were moving up, wastage of manpower had been halted, and the industry was on "the turn of the tide."

He accepted the challenge to coal, but in doing so, he would not hesitate to use every weapon in the armoury to carve out and hold this 200,000,000 tons of coal a year, which he fervently believed to be in the interests of the coal industry and of the nation.

Personal

Sir Charles Goodeve to be ISI's New President

DIRECTOR of the British Iron and Steel Research Association, Sir CHARLES GOODEVE, FRS, is president-elect of the Iron and Steel Institute. He is now a vice-president and was nominated for the presidency at the institute's autumn general meeting. He will take office at the annual general meeting in London on May 3 and 4, 1961.



SIR CHARLES GOODEVE

Sir Charles was born in Winnipeg, Canada, in 1904 and was educated at the University of Manitoba and University College, London. After some years as lecturer in Canada, he returned to the UK to take up an appointment as lecturer and later reader in physical chemistry at University College. From 1940 to 1942 he was deputy director of the department of miscellaneous weapon development at the Admiralty and from 1942 to the end of the war he was assistant and later deputy controller for research and development at the Admiralty.

Sir Charles was president of the Faraday Society for two years from 1950, in which year he also became vice-chairman of the Parliamentary and Scientific Committee. He was a member of the Lord President's Advisory Council on Scientific Policy from 1953 to 1956 and he was appointed president of the Chemical Section of the British Association in 1956.

Mr. W. LINDSAY, chief engineer at Barony Colliery (Ayrshire) has resigned to take up an appointment in industry in Australia.

Mr. CHARLES W. HAYWARD, chairman of the Firth Cleveland, Limited, group, began a round-the-world business trip on the maiden voyage of the new P. & O. liner Oriana.

Mr. D. MCLAREN BURNELL, general sales manager, left the employment of James Booth Aluminium, Limited, and the Delta Metal Company, Limited, on November 21.

Mr. C. LORD, chairman of Lancashire Tar Distillers, Limited, has been elected president of the British Tar Confederation and chairman of the executive board for the year 1960-61.

Mr. ALAN MEREDYTH HUDSON DAVIES, managing director of Fibreglass, Limited. was last week elected chairman of the Institution of Works Managers for the year 1960-61. He was made a Fellow of the institution in 1945.

At a dinner to celebrate the 70th anniversary of the Chainmakers' and Strikers' Association at Old Hill (Staffs) recently, Mr. F. Allen, the president, made a presentation to Mr. A. E. HEAD, general secretary for the past 27 years.

Presentation was made to Mr. FERGUS NIVEN, foreman for the past 28 years with Smith & Wellstood, Limited, makers of cooking equipment, etc., of Bonnybridge (Stirlingshire), when he left recently to take up a managerial post in London.

Mr. ABE MOFFAT, president of the Scottish Area of the National Union of Mineworkers, is to retire next year. Mr. Moffat, who is 64, started work in the mines at the age of 14. In 1956 he resigned from the Communist party in protest against Russian actions during the Hungarian rising.

COL. C. E. MACKELLAR, a director, and Mr. JOHN BAILEY, chief application engineer, of Westool, Limited, electrical equipment manufacturers, of St. Helens, Auckland (Co. Durham), left yesterday (Thursday) for a 10-day visit to Russia where they hope to sell machines and equipment.

For the second year running, a student of Coalville Mining and Technical College has been awarded the City and Guilds of London Institute's Silver Medal. He is Mr. JOHN ANTHONY BREWIN, a mining surveyor at New Lount Colliery, who was awarded the medal and first prize in the finals for the City & Guilds Mine Surveying certificate.

Mr. RONALD E. WILSON is to retire from the board of the Sheffield Smelting Company, Limited, on December 31. He has been with the company for 47 years, 36 of these as a director. His retirement marks the end of a 200-year association of the Wilson family with the company which was founded in 1780 by John Read, an ancestor of Mr. Wilson.

M. EMILE DUTILLEUL, of Belgium, has been elected third director of the General Directorate Coal of the European Coal and Steel Community's High Authority. His sphere will be the Directorate Supply and Demand. M. Dutilleul, who is 47, has been director of the planning bureau of the Belgian coal-mining concern, Charbonnage de Borinage.

Mr. E. S. EVERITT, managing director of Ruston-Bucyrus, Limited, excavator machinery manufacturers, of Lincoln, has been elected to the board of Bucyrus-Erie Company, excavator manufacturers, of the US.

Mr. T. J. BOULSTRIDGE, director in charge of the home sales division of Raleigh Industries, Limited, a subsidiary of Tube Investments, Limited, has relinquished his executive duties.

Mr. DONALD MEACOCK, manager of the Gorseinon group of tinplate works of the Steel Company of Wales, Limited, has retired after 40 years in the industry. After being assistant manager at Grovesend, he was transferred in 1940 as group manager of Dyffryn and Aber Tinplate Works. He returned again to Gorseinon in 1945 as group manager of Grovesend, Gorseinon, and Mardy Works. In 1951 the R. T. Mills and Burry Works, Llanelly, also came under his supervision, and he was also in charge of Fairwood Tinplate Works, Gowerton, until its closure.

NEW COAL DEPOSITS IN DURHAM?

RECENT geophysical research in parts of south-east Durham has suggested the possibility of deposits of coal outside the previously recognized boundaries of the Durham coalfield. Results of this work have been considered by the National Coal Board's Durham Divisional Geological Department, and it has been decided to investigate, by exploratory bore holes, the area most likely to yield.

First of two bore holes is at present being drilled just outside the village of Elvick and a second is to be drilled later about a mile further south. On results obtained from these two holes it will be decided whether further investigation is worthwhile.

In Parliament

HOME RESERVES OF IRON ORE

Keep Them for "Rainy Day" Minister Urged

PRESSED to take steps to see that the iron and steel industry used the maximum amount of imported ore in order to keep home reserves for a "rainy day," the MINISTER OF POWER, Mr. Richard Wood, told the House on Tuesday that these issues were still before the inquiry recently held into the application by Richard Thomas & Baldwins, Limited, to mine ironstone in north Oxfordshire, and any decisions reached would be in the light of the findings of the inquiry, and other matters.

MR. NEIL MARTEN (Con.), who had asked what plans the Iron and Steel Board had for the maintenance of adequate reserves of home iron ore for use by the South Wales industry, was told by MR. WOOD that supplies of home ore were normally drawn from the Oxfordshire and south-west Northamptonshire fields. It was impossible to forecast technical and economic developments into the distant future, but the board estimated that reserves in these fields would meet the demands of the industry in South Wales and elsewhere for some 50 to 60 years.

MR. MARTEN, urging the maximum use of imported ore, said that the importing of iron ore would also regenerate world trade and be a great help to British shipping. He wanted these factors brought to the attention of the Iron and Steel Board.

Figures showing the cost of importing iron ore from abroad into the UK from January to September, 1960, compared with the same period in 1959, and the countries from which the exports were secured were given by MR. J. C. GEORGE, Parliamentary Secretary to the Ministry of Power, in reply to a question from MR. K. LEWIS (Con.).

RTB and the Americans

FUTURE of Richard Thomas & Baldwins, Limited, arose when MR. MICHAEL FOOT (Lab.) asked the Chancellor of the Exchequer whether, pending the Government's decision about RTB, he would give a guarantee that he would forbid the purchase of any shares in the firm by foreign financial interests. MR. SELWYN LLOYD replied that until the shares were saleable on the Stock Exchange, the question could not arise.

MISS JENNIE LEE (Lab.) said that the only reason a foreign or British investor could become interested in the shares was that RTB was a well-run and profitable firm. It would be "legalized robbery" to allow any foreign investors to take part in it. MR. LLOYD replied that investment by other countries here was very important.

MR. FOOT: "Is the Chancellor saying that he is contemplating, in any circumstances, that part of this industry should be sold off to foreign interests?" MR. LLOYD said it was intended to denationalize the industry. Then the shares would be saleable on the Stock Exchange, when the question might arise. At present there were no means to prevent private people from acquiring shares on the Stock Exchange. The situation was hypothetical, which he would deal with when it arose.

MR. HAROLD WILSON (Lab.) said that, since the Chancellor had said that as long as it was in public hands RTB could not be sold out to the Americans but that if it were in private hands we could not stop it, that was one good reason why it should remain in public control. He added that if RTB were sold on the same "humiliating terms" as Staveley Iron & Chemical Company, Limited, and Llanelly Steel Company, Limited, the robbery would not be legalized under the denationalization Act: it would be "illegal" robbery.

MR. LLOYD said he did not accept what had been said about these transactions, because the price was reasonable and fair value was obtained. "I think the trouble comes from the original act of sin—the nationalization of the industry."

HOUSE COAL SUPPLY ASSURANCE

WHILE manpower difficulties were not likely to cause shortages of house coal this winter, the Coal Board was continuing to make vigorous efforts to improve recruitment and reduce wastage. MR. J. C. GEORGE, Parliamentary Secretary to the Minister of Power, told MR. CHARLES GREY (Lab.).

MR. WILLIAM BLYTON (Lab.) said that young men under 31 were leaving the industry at the rate of 32,000 a year. Did the Minister expect the pits to be run with old men by 1965? MR. GEORGE replied that the reduction in numbers in the mines was partly the result of the board's restriction on recruiting to meet the reduced demand for coal. All divisions requiring men were now conducting vigorous local recruitment campaigns, and the Coal Board had "some reason to be satisfied with the results." He agreed that the confidence of young men in the future of the industry was not helped by pessimistic forecasts about output. The Government's view was that the

lower 1965 figure in the Revised Plan for Coal, which envisaged 200,000,000 tons of mining capacity at that time, would not be far out.

Asked by MR. EMANUEL SHINWELL what consultative machinery existed between his department and the National Coal Board, MR. RICHARD WOOD, Minister of Power, said colliery closures were entirely a matter for the board, which, however, kept him informed about the total size of its programme. As soon as it decided which individual pits were to be closed, the information was passed to the Board of Trade and Ministry of Labour, so that arrangements could be made for alternative employment.

COAL OUTPUT IN 1961

PRODUCTION of coal in 1961 might fall slightly, but with demand expected to be at much the same level as in 1960, the National Coal Board expected to reduce its stocks by slightly more than this year, MR. RICHARD WOOD, Minister of Power, told MR. GERALD NABARRO (Con.). He added that on November 19, the board held 31,800,000 tons of coal and 5,200,000 tons of coke, worth about £125,000,000.

Told by MR. J. C. GEORGE, Parliamentary Secretary to the Minister of Power, that undistributed stocks during the 11 weeks ended November 19 fell by 2,900,000 tons, MR. JAMES BOYDEN (Lab.) asked whether, in view of the improved lifting of stocks, he was quite sure there had been no closure of pits with good reserves simply because they were temporarily uneconomic. MR. GEORGE replied that the decision to close any particular mine was taken in the previous year, and the lifting of a certain amount from stocks during these months would have no effect on such decisions.

Asked by MR. NABARRO what the rate of loss of the Coal Board was since June 30, 1960, when there was a loss forward of £64,000,000, MR. WOOD said the board's third quarter results were usually adverse and those of the fourth favourable. He expected the fourth quarter of this year also to reflect the improvement which should follow the recent price increases. The board's accumulated deficit was meanwhile being covered by internal resources and arisings.

CLOSING OF STEEL WIRE FACTORY

ASKED by MR. JAMES HOY (Lab.), what steps he was taking to find other employment for 400 workers to become redundant at the Leith, Edinburgh, factory of British Ropes, Limited, steel wire manufacturers, of Doncaster, the MINISTER OF LABOUR, Mr. John Hare, said he understood the closure would be spread over about nine months, and arrangements had been made with the firm to register its workers before they were discharged so as to avoid delay in finding them other work.

The physical control of disposal of the factory site was a matter for the firm alone.

NO CASE FOR FUEL OIL TAX

INLAND consumption of coal in the first 10 months of 1960 increased by 6,000,000 tons, or 4 per cent., over the same period last year, MR. RICHARD WOOD, Minister of Power, told MR. ALAN FITCH (Lab.). Oil consumption had increased by 8,000,000 tons of coal equivalent, or 17 per cent., over 1959. MR. FITCH thought these were "alarming figures," and asked the Minister what plans he had for restricting oil and helping the coal industry, such as the German Government had done by imposing a tax on fuel oil.

MR. WOOD replied that he saw no case for restricting oil at a time when the demand for coal next year was likely to be considerably higher than production.

When MR. AUSTEN ALBU (Lab.), suggested that there was an apparent conflict between the Wilson Committee and the Advisory Council on Scientific Policy regarding the possibilities of the total gasification of coal, MR. J. C. GEORGE, Parliamentary Secretary to the Minister of Power, replied: "There is no conflict between the two bodies. Both recommend that work on gasification should be pursued, and negotiations to have this work pursued are in progress now."

DSIR REPORT ON SHIPYARDS

PUBLICATION of the report of the Department of Scientific and Industrial Research on the shipbuilding industry—which has been reported as being highly critical of the industry's productivity—will be made as soon as possible, SIR DAVID ECCLES, Minister of Education, told MR. P. WILLIAMS (Con.). The decision had been taken after discussions between the DSIR, the Ministry of Transport, and the Shipbuilding Conference, he said.

Mr. Williams said that first news of the reports appeared to have leaked and were adverse to the reputation of the industry. He asked for an assurance that things of this nature would not happen again. SIR DAVID ECCLES said he could not give such an assurance because he had no idea from what source the leak had come. Publication of the report would set all these doubts at rest, he said.

NO CHANGE TO COAL PLAN

ASKED by MR. JOSEPH SLATER whether any amendments of the total energy needs were contemplated to the Revised Plan for Coal, based on the estimated 300,000,000 tons of coal equivalent needed in 1965, MR. RICHARD WOOD, Minister of Power, said there were no changes which would justify the Coal Board in aiming at a mining capacity in 1965 lower than 200,000,000 tons. He told Mr. Woodrow Wyatt (Lab.) that he thought the mineworkers' estimate of 280,000,000 tons of coal equivalent required by 1965 was too pessimistic. If there were, up to 1965, anything like the advance in energy requirement that had occurred this year, the need would be not for 300,000,000 tons but 340,000,000 tons coal equivalent in 1965.

In a written answer to MR. HAROLD NEAL (Lab.), MR. WOOD said that inland energy requirements for the UK in 1961 were estimated at about 265,000,000 tons of coal equivalent, dependent on economic activity, weather, and other factors.

DISPOSAL OF KRUPP ASSETS

IN a statement on the progress made in the disposal of Herr Alfred Krupp's holdings in the firm of Krupp, MR. EDWARD HEATH, Lord Privy Seal, said that under the deconcentration plan of March, 1953, assets worth about £12,000,000 had been disposed of. The remainder of coal and steel assets incorporated in the Rheinhausen holding company remained to be sold.

The international committee concerned had already granted an extension of time until January 31, 1961, for the disposal of these assets, and a meeting had been called to consider an application by Herr Krupp for a further extension of time to January, 1962.

FIRTH CLEVELAND, LIMITED—Interim dividend for the year ended December 31, 1960, is raised to 12 (10) per cent.

IRON AND STEEL TRADE

EXPANSION is still the keynote of the industry and, so far, setbacks in the shipbuilding, motor manufacturing, and some other steel-using industries, have not served to dampen the high hopes for steelmakers' extensions and developments in progress or planned for the future. The strength of the home demand for steel for public and private capital investment projects is plain for all to see and delivery dates, particularly for most kinds of structural steel and plate, show no signs of shortening.

Pig-iron

Plentiful supplies of pig-iron in all grades are reported from most areas. The engineering and speciality foundries are able to obtain full requirements of low phosphorus pig-iron and, although one or two brands are limited in output, other irons of equal analysis are available to augment any shortages which may arise.

Hematite and refined irons can be obtained in whatever quantities are required and there are no signs that present output will fall short of the demand.

Ferro-alloys

Ferro-silicon remains an active feature, while silicon metal is in steady demand at a low level. Both the low and high carbon grades of ferro-chrome are quite active, and calcium silicide is receiving fair attention. Ferro-manganese is well supported, and the limited interest in ferro-sulphide and ferro-phosphorus is at a satisfactory level.

No change is noted in either the price of or demand for ferro-tungsten, but ferro-molybdenum and ferro-vanadium are active. The demand for ferro-niobium and ferro-titanium is satisfactory.

Semi-finished Steel

Most of the re-rollers are able to obtain maximum outputs commensurate with the labour available and work on hand is generally sufficient to keep the mills occupied for some time ahead.

There are signs of an overall easing in the pressure of demand, noticeably for light sections, bright drawn bars, and hot rolled strip. Arisings at the steelworks of suitable re-rolling defectives and crops continue to be taken up.

Finished Steel

The majority of rolling dates for sections and joists have been extended, although in special instances fairly quick dates can be obtained where mills are short of a rolling quantity.

Plain, chequered, and floor plates maintain their position and rolling promises are on an extended basis, although it is hoped that this will improve when the new mills, now in the course of running in, have reached maximum production.

Finished Iron

Following last week's increase in the price of common foundry pig-iron, prices of manufactured iron have now been raised—by roughly 30s. a ton.

Prices for crown iron (bar basis, 2½ in. to ¼ in.) are now:—England and Wales (Zone 1), £50; Scotland, £49 15s.; Ireland, f.o.q. Belfast, £53; all other Northern Ireland ports, £54, f.o.q. Cable iron is £1 per ton higher than the foregoing prices.

Glynwed Tubes Forecasts Peak Profits

IN a statement dealing with the recent purchase for £1,500,000 of Normalized Bolts, Limited, Mr. W. G. A. Russell, chairman of Glynwed Tubes, Limited, of Bilston (Staffs), says that it has now been decided to defer the rights issue, intended to provide the cost of the acquisition, until market conditions are more settled. The purchase, it is stated, has been financed by bank borrowings. The new acquisition fits neatly into existing group activities.

Mr. Russell forecasts that results will show new peak figures for output, sales, and profits. A final dividend of 13½ per cent. is expected to make 22½ per cent. for the current year, against the previous equivalent of 17½ per cent.

Pre-tax profits for 1960 are estimated at not less than £1,400,000, compared with £1,232,000 for 1959. To this will be added £250,000—the profits from March 31, 1960, from Normalized Bolts, Limited, and its subsidiary, James Wiley & Sons, Limited.

As a result of their new acquisition, Glynwed's total interests will be broadly balanced between manufactures in the non-ferrous field and the ferrous trades. Another result will be that overall marketing will be fairly equally divided between the building and constructional and the general engineering trades.

ICI Seeking to Boost Trade with Russia

PRESENT exports by Imperial Chemical Industries, Limited, of about £3,000,000 a year to the Soviet Union could be doubled or quadrupled within the next two or three years, said Mr. S. P. Chambers, chairman of ICI, in Moscow last week. ICI representatives are negotiating the sale of polythene processes to the Soviet Union, and Mr. Chambers said that negotiations are expected to start soon for purchasing Soviet processes for caprolactam—a raw material for nylon—which was better and cheaper than could be had elsewhere.

Also in Moscow were representatives of Simon-Carves, Limited, which would erect the polythene plants in co-operation with ICI. This would be the first of many agreements on chemicals, said Mr. Chambers.

BAKER PERKINS, LIMITED, manufacturing engineers, of Peterborough (Lincs), has bought its own aircraft which will be used to fly executives to business engagements.

Appointments

Management Changes at GEC's Witton Works

WHEN Mr. J. J. Gracie retires on December 31, 1960, as general manager of the Witton engineering works of the General Electric Company, Limited, he will be succeeded by Mr. T. H. KELSEY. Mr. W. D. MORTON will become assistant general manager, also from January 1, 1961.

MR. T. H. KELSEY

Mr. Kelsey joined GEC at Witton in 1929, moving to Manchester in 1932 and becoming assistant branch engineer in Liverpool three years later. He returned to Witton in 1940 to take charge of the section of the materials control department concerned with high priority contracts. In 1942 he joined the Ministry of Supply, becoming successively deputy director of the Directorate of Industrial Electrical Equipment and director of disposals.

Mr. Kelsey returned to GEC in 1947 as its representative at BEAMA. He was appointed technical assistant to Sir Harry Railing in 1955 and later personal assistant to Mr. A. L. G. Lindley. In 1958 he became assistant general manager at Witton and two years later, deputy general manager.

On graduating in mechanical science from Cambridge in 1944, Mr. Morton joined the armaments design department of the Ministry of Supply. After the war he became a graduate apprentice with the English Electric Company, Limited, becoming traction engineer in 1948. He joined GEC as manager of the traction division in 1958.

Mr. WILLIAM KINGHORN, legal assistant to the Durham Divisional Coal Board, has been appointed clerk to Hebburn Urban District Council.

Mr. RAYMOND HORBURY has been appointed cashier to the Yorkshire Area of the National Union of Mineworkers. He has been on the staff at the union's Barnsley headquarters for 27 years.

Mr. L. R. WATKIN has been appointed to a group managership in No. 4 Area of the East Midlands Divisional Coal Board, and will take up the appointment at the end of this year. At present he is manager of Donisthorpe Colliery (Leics).

Mr. S. E. BENNETT has been appointed manager of the Northern sales area of the Rockwell Machine Tool Company, Limited, London, N.W.2, in succession to Mr. F. A. Young, who has given up the post through ill health. Mr. YOUNG will be part-time representative for the North Wales area.

Mr. C. MACQUARIE, general manager of the Bilston iron and steel works of Stewarts and Lloyds, Limited, has been granted temporary leave of absence on his appointment as assistant general superintendent of the Durgapur iron and steel works in India. Formerly assistant general manager of the Corby iron and steel works of S&L, Mr. G. G. RIDLEY has been appointed assistant general manager at Bilston.

Mr. E. H. LAITHWAITE, has been appointed building products manager of James Booth Aluminium Limited, non-ferrous metal manufacturers, of Birmingham, as part of the company's plan to provide architects and builders with a comprehensive technical service regarding the use of aluminium and its alloys.

Mr. MAURICE DOWNHAM has been appointed home sales manager of Perkins Outboard Motors, Limited, the subsidiary of F. Perkins, Limited, Peterborough. For the past five years he has been general sales manager of the Economic Gas Boiler Company, Limited, Burnley, and its associated sales company, Brunlec Appliances, Limited.

Mr. W. C. WRIGHT, assistant production manager of Baker Perkins, Limited, engineers, of Peterborough, has been appointed works manager of Rowson Conveyors, Limited, which joined the Baker Perkins group this year. Mr. Wright joined Baker Perkins, eight years ago. From 1956 to 1958 he was with the associated company in South America.

West Midlands NCB Appointments

MR. P. J. MURPHY has been appointed by the West Midlands Divisional Coal Board to be supervisor of deputies' refresher courses at the Kemball Training Centre, in the North Staffs Area. For the past two years he has been manager of Parkhall Colliery, and during the previous eight years held various managerial appointments in North Staffs. Before going to the division in 1950 he had wide experience of mining in the Nottinghamshire coalfield.

Mr. J. V. Blaiklock, who has succeeded Mr. Murphy as manager of Parkhall, has been manager of Glasshouse Colliery for the past 18 months, and was undermanager at the same pit for 18 months before that. He had previously worked at Holditch and Parkhouse Collieries.

In 1949 Mr. Blaiklock was awarded a National Coal Board university scholarship. He obtained an honours degree in mining at Birmingham University.

R. & J. DICK MOVES WITH THE TIMES

HOW the company has moved with the times is referred to by Mr. John Dunlop, chairman of R. & J. Dick, Limited, Glasgow, in his annual report. Substantial quantities of flat balata belting, upon which the prosperity of the company has been built, are still required, he says, but as methods of power transmission had changed so had the company changed from balata belting manufacturers to power transmission engineers.

The policy of expansion and diversification was now bearing fruit and the group profit for the year, before taxation, rose to £136,122 (£76,212). The dividend is increased to 35 (30) per cent.

It is proposed in the near future to issue one 4s. ordinary share for each 4s. ordinary share held so that the issued capital may more adequately represent the assets employed, and three fully-paid ordinary 4s. shares for every 20 15s. preference shares held as compensation for proposed alterations in voting and other rights of preference holders.

In this paper, which is a translation from Metallurg, 1960, V. No. 4, pp. 4-8, the authors, G. V. Ilyushchenko and M. G. Volkov, of the thermotechnical laboratory of the Kuznetsk Steelworks, discuss heat exchange phenomena influencing the efficiency of hot-blast stoves. They then describe how, at the Kuznetsk Steelworks, stoves originally designed to give a blast temperature of 550 deg. C. were enlarged to give, in conjunction with a modified operating routine, blast temperatures of 850 deg. C. and subsequently 950 deg. C. An investigation of the operation of the hot-blast stoves on different cycles, which included measurements of the temperature distribution over the height of the checkers, is described: this showed that a change from a 3-hr. to a 2-hr. cycle of operation increased both the thermal efficiency of the stoves and the temperature of the blast.

BLAST-FURNACE STOVES

Relation of Operating Cycle, Blast Temperatures, and Efficiency

HOT-BLAST stoves of blast furnaces are regenerative heat exchangers, in which the process of heat transfer from the heating medium to the heated medium is divided into two periods: the gas period and the air period. During the course of the first period, the heat of the combustion products is transferred to the checker brickwork of the hot-blast stove and is accumulated within it; during the second period, the accumulated heat is given up to the cold air. In practice the gas period is about twice as long as the air period.

The checker brickwork of these stoves accumulates heat during the course of the gas period to an extent which is not constant. At the start of heating the temperature difference, *i.e.*, the mean temperature difference between the combustion products and the checker brickwork, has the greatest value, and the cold checker brickwork absorbs heat at a high rate. In time the checker brickwork becomes heated up, the temperature difference is decreased, and the rate of heat transfer is diminished; the checker brickwork takes part in the heat exchange to a steadily decreasing extent, in consequence of which the temperature of the outgoing combustion products rises. A certain quantity of heat is wastefully lost from the stove in the products of combustion leaving the checker brickwork, thereby lowering the efficiency of such stoves. The quantity of heat lost is dependent on gas temperature. With the decrease in the temperature of the combustion products the efficiency factor rises, and *vice versa*. Therefore, the duration of the gas and air periods should be chosen in such a way, that the minimum possible quantity of heat shall be lost with the outgoing combustion products, and the efficiency factor of the stoves is thereby improved.

The hot-blast stoves of the blast furnaces at the Kuznetsk integrated steelworks were designed and constructed for heating 2,400-2,500 N cu. m. of blast air per minute up to 500-600 deg. C. and were equipped with movable burners of the "Frein" type with a rated consumption of up to 24,000 cu. m./hr.

An increase in the capacity of the blast furnaces, a change-over to their operation with higher top pressure, and the addition of steam to the blast, necessitated an increase in the quantity of blast and an increase in its temperature up to 800-850 deg. C. But the heating capacity of the hot-blast stoves, determined from the heating surface area and the arrangement of the checker brickwork, was insufficient for the purpose.

The hot-blast stoves were therefore reconstructed, increasing their heating surface area (see Table I)

TABLE 1.—*Technical Data of the Old and Reconstructed Hot-blast Stoves.*

Characteristics of the hot-blast stoves.	Before reconstruction.	After reconstruction.
Overall height, m.	37.49	40.57
Diameter, m.:		
Of shell (nominal)	7.8	7.8
Of lining (internal)	6.7	6.7
Thickness, mm.:		
Of walls	460	460
Of external wall of combustion chamber	690	690
Of separating wall	575	575
Of dome	450	450
Cross-section of combustion shaft, sq. m.	3.99	3.99
Height of checker brickwork, m.	30.00	32.85
Surface area, sq. m.:		
Of heating surface of checker brickwork	13,800	16,880
Of combustion shaft	253	276
Of dome	67	67
Overall heating surface, sq. m.	14,120	17,223
Characteristics of Checker Brickwork:		
Dimensions of a checker brick, mm.	185×55×150	170×50×150
Dimensions of checker openings, mm.	65×65	60×60
Number of openings, surrounded with brickwork on four sides	—	2,100
Hydraulic diameter, m.	0.065	0.06
Overall active cross-section of checker brickwork, sq. m.	7.47	7.70
Active cross-section of checker brickwork per 1 sq. m. of surface area, sq. m.	0.294	0.296
Heating surface per cu. m. of checker brickwork, sq. m.	18.1	19.8
Volume of checker brickwork per 1 sq. m. of heating surface area, cu. m.	0.0392	0.0354
Volume of checker brickwork per cu. m. of checker volume, cu. m.	0.708	0.702
Overall volume of the checker, cu. m.	762.4	852.5
Total volume of bricks in the checker, cu. m.	539.8	598.4

by raising the height of the checker brickwork by 2.85 m. and decreasing the dimensions of the regenerator openings from 65 by 65 mm. to 60 by 60 mm.

In toto the heating surface area of the checker brickwork after reconstruction was increased by 18 per cent. The thermal operation of the stoves was also radically altered.

Efficiency Factor

The consumption of blast-furnace gas when operating with the former duration of the cycle rose from 20,000 to 26,800 N cu. m./hr. Complete combustion of the increased quantity of gas was ensured by a supplementary supply of compressed air into the stoves, since the output of the combustion air fans was inadequate. The temperature of the combustion products passing out of the checker brickwork was increased from 190 to 255 deg. C., which reduced the efficiency factor of the hot-blast stoves.

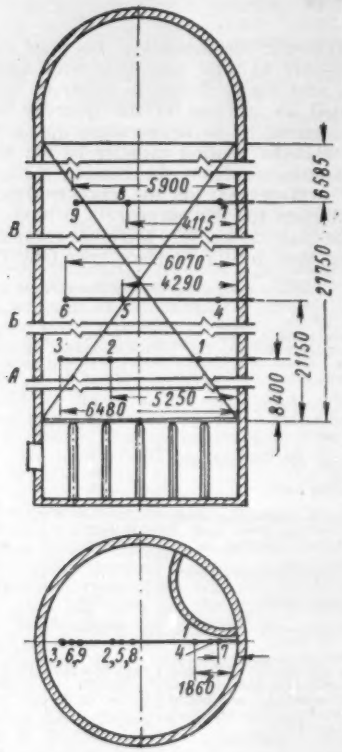


FIG. 1.—LOCATION OF THE THERMOCOUPLES IN THE HOT-BLAST STOVE, A, B, C LEVELS; 1, 4, 7 THERMOCOUPLES FOR MEASUREMENT OF THE TEMPERATURE OF THE CHECKER BRICKWORK IN THE VICINITY OF THE COMBUSTION CHAMBER; 2, 5, 8 THERMOCOUPLES OF THE CENTRAL PART; 3, 6, 9 THERMOCOUPLES FOR MEASUREMENT OF THE TEMPERATURE OF THE BRICKWORK OF THE PERIPHERAL PART OF THE CHECKERS OPPOSITE THE COMBUSTION CHAMBER.

Thermal balances, drawn up before and after the reconstruction, show that the efficiency factor of the new stoves fell from 77.7 per cent. to 72.3 per cent., although the blast parameters and the duration of the cycles remained unchanged. The fall in the efficiency factor is explained by the high heat loss in the outgoing combustion products in consequence of the increase in their temperature. Maintenance of the efficiency factor at the earlier level could have been ensured by restricting the output of the cycle, since under such conditions there would be a decrease in the temperature of the outgoing waste gas; however, this could have been obtained only by complex automation of the hot-blast stoves.

Parallel with the determination of the thermotechnical figures for the operation of the reconstructed hot-blast stoves, an investigation was made of the distribution of the streams of gas and air over the height and cross-section of the checker brickwork. With this aim, chromel-alumel thermocouples were inserted into the checker brickwork of one of the hot-blast stoves, thus recording the temperature of the brickwork (Fig. 1). Two rows of thermocouples were placed in the upper zone of more active heat exchange and one in the lower part of the checker brickwork. In each row there were three separate thermocouples, measuring the temperatures of the brickwork on the periphery adjacent to the combustion chamber, in the central part of the stove and in the peripheral part of the checker brickwork on the opposite side to the combustion chamber. The thermocouples were connected with compensating cables to a recording potentiometer.

The measurements showed that there were temperature differences in the checker brickwork, during both the gas and the air periods, even along a single row of thermocouples at the same level of measurement (Table 2). From the table it is evident that on the side opposite to the combustion chamber, at all three levels, the checker tempera-

TABLE 2.—*Temperature of Brickwork During the Time of Operation of the Hot-blast Stoves.*

Point of measurement.	Temperature, deg. C., at the levels		
	Bottom.	Centre.	Upper.
At end of heating period			
Adjacent to the combustion chamber	450	810	1,100
In the central part of the checker brickwork	500	850	1,140
In the peripheral part on the opposite side to the combustion chamber	520	880	1,160
At end of air period			
Adjacent to the combustion chamber*	260	530	810
In the central part of the checker brickwork	230	580	840
In the peripheral part on the opposite side to the combustion chamber	280	630	880

* TRANSLATOR'S NOTE.—In the light of the paragraph preceding this table, it is thought that 260 deg. at the bottom level is a misprint for 200 deg. C.

ture is a maximum, while it is a minimum on the side adjacent to the combustion chamber.

Distributing Baffle Suggested

Such a distribution of temperatures is evidence of the unevenness of the streams of gases over the cross-section of the checker brickwork. The hot gases, on emerging from the combustion chamber, heat mainly that part of the checker brickwork, which is situated on the opposite side to the combustion chamber; the part of the checkers located nearer to the combustion chamber is subject to less intensive heating action. During the course of the air period, the checkers are also cooled down unevenly. The main stream of air passes through the region of the checker brickwork situated adjacent to the combustion chamber. Such a distribution of the streams of gas and air is undesirable from the point of view of complete heat utilization. Possibly, the installation of a distributing baffle on top of the dividing wall between the checker and the combustion chamber will provide a more even distribution of the combustion products over the cross-section of the checker brickwork, but for this purpose it will be necessary to try out such a baffle in a model of a hot-blast stove.

At the present time in the hot-blast stoves at the Kuznetsk integrated steelworks a complex system of automatic control of the blast parameters, of the thermal processes and of the switching of the valves has been introduced. Automatic maintenance of the prescribed temperature and humidity of the blast ensures even running of the blast furnaces. The system of automatic control of the thermal processes of the hot-blast stoves maintains the required quantities of heated gas and air, brings about control of the dome temperature and of the combustion of the gas, and in due course stops the fans which supply air to the burners. The rate at which gas is supplied for heating up the hot-blast stoves is controlled by a valve placed in front of each gas burner, and the quantity of combustion air by the rate of rotation of the air fans. The gas and air pass into the burners in a definite proportion, since the angle of the gas control valves and the speed of the fans are strictly limited in accordance with the setting of the thermal working conditions established periodically on the basis of analysis of the waste gases. Samples of the waste gases, taken from the space below the checker brickwork, are analyzed for CO_2 and O_2. The CO content and the excess air coefficient are determined from a graphed relationship. The average analysis of the combustion products is as follows:—24.4 per cent. CO_2; 2.4 per cent. O_2; 0.0 per cent. CO and $\delta = 1.35$.

Temperature Control

The dome temperature is controlled by a dual position regulator, working as a unit with a type TKh-VIII, chromel-alumel thermocouple, installed in the dome of the hot-blast stove. Previously the dome temperature was controlled by varying the excess air coefficient of the mixture. Now, when the dome temperature is controlled by periodic reduction of the quantity of gas, the capacity of the burners is fully utilized, since there is no necessity for a reserve in the capacity of the fans for increasing the excess air coefficient. This reserve is successfully utilized for the combustion of an increased quantity of gas.

The moment of ignition of the gas, the combustion process and the extinction of the flame are controlled by a photoelectric cell, installed on the burner and facing into the combustion chamber. On ignition of the gas the photoelectric cell gives an impulse to the fan motor; when the delivery of gas is cut off or the flame is extinguished, it delivers an impulse to stop the fan and close the gas cut-off valve, which prevents the formation of an explosive mixture.

In order to increase the heat capacity of the hot-blast stoves, the old movable gas burners have been replaced with more powerful ones (Fig. 2) with an output of the fans of 40,000 cu. m. air/hr.

After automation and the installation of the new burners, there was also a substantial change in the thermal operation of the hot-blast stoves. Originally the heating of the blast was carried out by means of four hot-blast stoves. The duration of the gas period was 6 hr., and that of the air period 2 hr. But it was soon necessary to give up the 8-hr. cycle, since it was uneconomic. The

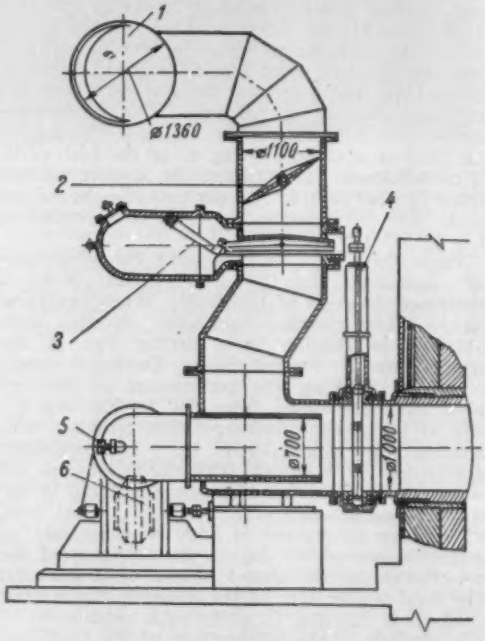


FIG. 2.—GAS BURNER.

1.—Clean gas main. 2.—Gas regulating valve. 3.—Gas shut-off valve. 4.—Isolating damper. 5.—Photoelectric cell. 6.—Fan.

TABLE 3.—*Calculation of the Efficiency of Hot-blast Stoves Operating on Cycles of Different Duration.*

Characteristics.	Duration of cycle, hr.			
	8	6	4.5	3
Duration of periods, hr.:				
Heating	6	4	3	2
Cooling	2	2	1.5	1
Gas consumption, N cu. m./hr.	60500	57000	58200	55500
Calorific value of the gas, kilocal./N cu. m.	947	960	945	940
Waste gas temperature, deg. C.:				
At start of heating	170	170	160	150
At end of heating	450	390	350	270
Mean for the period	310	280	255	210
Consumption of blast, N cu. m./min.	2,604	2,618	2,597	2,586
Temperature, deg. C.:				
Of cold blast	80	120	65	90
Of hot blast	850	850	850	840
Humidity of blast, g./N cu. m.	30.2	30.2	30.2	30.2
Heat content of 1 N cu. m. cold blast, kilocal.	24.8	37.3	20.2	27.9
Heat content of 1 N cu. m. hot blast, kilocal.	286.5	286.5	286.5	284.3
Specific heat of the steam at cold blast temperature, kilocal./kg., deg. C.	0.4472	0.4474	0.4471	0.4473
Specific heat of the steam at hot blast temperature, kilocal./kg., deg. C.	0.4997	0.4997	0.4997	0.4997
Efficiency factor calculation.				
Heat input from gas combustion, millions kilocal	57.4	54.7	55.0	52.2
Physical heat of the gas and air, millions kilocal	1.148	1.094	1.100	1.044
Amount of heat expended in heating up the hot-blast stove, millions kilocal	58.548	55.794	56.100	53.244
Throughput of blast, thousands N cu. m./hr.	156.240	157.080	155.820	155.160
Heat expended in heating up the air, millions kilocal	40.8	39.2	41.3	39.8
Quantity of steam in the blast, kg.	4,720	4,750	4,675	4,670
Heat expended in heating up the steam, millions kilocal	1.836	1.765	1.814	1.783
Total heat expended in heating up the blast, millions kilocal	42.636	40.965	43.114	41.583
Efficiency factor of the hot-blast stoves, per cent.	72.8	73.5	76.8	78.3

temperature of the combustion products at the end of the gas period rose to 450 deg. C. and the efficiency factor of the stoves was low (72 per cent.). With the aim of increasing the efficiency factor of the hot-blast stoves by reason of a decrease in the heat losses in the outgoing combustion products, the duration of the cycle was successively shortened to 6, then 4½ and, later, 3 hr. From Table 3 it is evident that the reduction in the duration of the cycle brought about a decrease in the consumption of gas and a drop in the temperature of the outgoing combustion products. The temperature of the combustion products fell from 450 deg. C. on the 8-hr. cycle to 270 deg. C. on the 3-hr. cycle. The efficiency factor increased correspondingly from 72.8 per cent. to 78.3 per cent., *i.e.*, by 5.5 per cent. The gas consumption under such conditions fell by 5,000 N cu. m./hr.

From these data may be seen the advantages of operating the hot-blast stoves with a shortened duration of the cycle. When operating on a 3-hr. cycle, successful results were obtained in relation to a further rise in the temperature of the hot blast. During a recent period of working, the temperature of the hot blast has been raised from 850 to 900 deg. C., and at the present time operation on blast with a temperature of 950 deg. C. has been successfully developed. As is known, with the increase in the temperature of the hot blast there is a fall in the efficiency of hot-blast stoves. At the present time, with a blast throughput of 2,500 N cu. m./min. at a temperature of 900 deg. C. the efficiency of the hot-blast stoves has fallen to a level of 71 per cent. The final temperature of the outgoing combustion products is 320 deg. C. under such conditions.

In practice, if the temperature of the hot blast is raised, it is desirable also to have a high efficiency factor of the hot-blast stoves. In this connection, at the Kuznetsk integrated steelworks an investigation has been made of the operation of the hot-blast stoves on 3-hr. and 2-hr. cycles. The number of experimental heatings on the 3-hr. cycle was 192, and on the 2-hr. cycle 540. On the 2-hr. cycle the duration of the air period was 40 min.

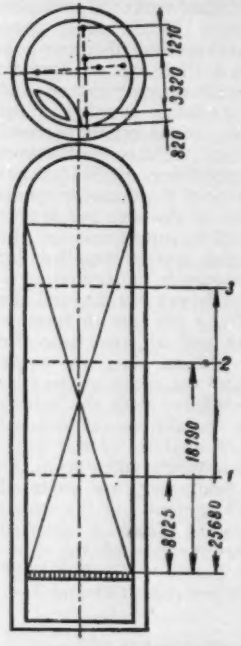


FIG. 3.—DIAGRAM OF THE PLACING OF THE THERMOCOUPLES IN THE CHECKERS OF THE HOT-BLAST STOVE: 1, 2, 3 LEVELS.

The experiments showed that during the operation of the hot-blast stoves on a 2-hr. cycle the efficiency factor rises by 3.4 per cent., the temperature of the outgoing combustion products falls by 30 deg. C., and the gas consumption is decreased by 500 N cu. m./hr. In this way a reduction in the duration of the cycle on increasing the temperature of the hot blast increases the efficiency of hot-blast stoves.

During the conduct of these experiments a study was made of the distribution of temperatures over the height of the checker brickwork in relation to the duration of the

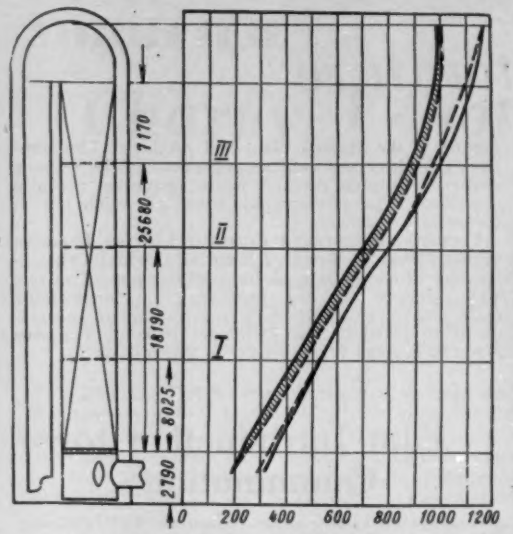


FIG. 4.—CHANGE IN THE TEMPERATURE OF THE CHECKER BRICKWORK OVER ITS HEIGHT DURING THE HEATING PERIOD. THE SOLID LINES REPRESENT THE TEMPERATURES AT THE START AND END OF THE HEATING PERIOD ON THE 3-HR. CYCLE, WHILE THE BROKEN LINES REPRESENT THE CORRESPONDING TEMPERATURES ON THE 2-HR. CYCLE.

cycle. For this purpose 18 chromel-alumel thermocouples, placed at three levels at different heights above the grid which carries the checker brickwork (Fig. 3), were inserted into the checker brickwork of one of the hot-blast stoves. The readings of the thermocouples were recorded by a recording potentiometer for the 3-hr. and 2-hr. cycles. As is evident from Fig. 4, no special differences in the distribution of the temperatures were observed for the central and upper rows of the checker brickwork at the end of the gas period; the merging of the curve for the bottom part of the checker brickwork on the 2-hr. cycle of operation with the same curve for the 3-hr. cycle is explained by the decrease in the final temperature of the outgoing combustion products on the 2-hr. cycle.

A substantial difference in the distribution of temperatures is noticeable at the start of heating (or at the end of the air period). The curve of temperatures for the end of the air period on the 2-hr. cycle is displaced to the right in relation to the same curve for the 3-hr. cycle. The area between them, which is shaded in Fig. 4, represents, in fact, an additional quantity of heat which can be utilized in the blast furnace. Consequently, operation of the hot-blast stoves on a 2-hr. cycle may be employed not only to increase their efficiency but also to raise the temperature of the hot blast.

Propane Dressing

THIS DRAMATIC PHOTOGRAPH OF PROPANE DRESSING OF A LARGE BLAST FURNACE BELL CASTING IN A STEWARTS AND LLOYDS STEEL-FOUNDRY IS ONE OF 12 TAKEN BY W. RALSTON, LIMITED, GLASGOW, SELECTED FOR INCLUSION IN THE "BEST INDUSTRIAL PHOTOGRAPHS OF THE YEAR" DISPLAY AT THE PHOTOGRAPHIC AND TELEVISION EXHIBITION, HELD AT THE ROYAL ALBERT HALL, LONDON, NOVEMBER 21-25.

COMPANHIA COMÉRCIO E NAVEGACAO launched on November 7 the first ship built at the Lahmeyer shipyard. Entirely constructed by Brazilian engineers and technicians, this cargo vessel of 1,550 tons d.w. is the first of four such ships to be built by the company, which has also installed slipways for vessels of 6,200 and 10,500 tons.

A BRITISH STANDARD for colliery haulage rollers is under consideration. It is suggested that it might be based on the National Coal Board purchasing specification P.110, "Cast-steel Haulage Rollers with Parallel Flanges," and that there may be need later to extend the work, to encompass a wider range of materials and to include requirements of anti-friction bearings.

New Literature

CATALOGUES, booklets, and other publications recently received include those mentioned below. Readers wishing to obtain a copy of any of the publications referred to should apply direct to the address given, at the same time mentioning IRON AND COAL.

RICHARD SUTCLIFFE, LIMITED, Universal Works, Horbury, Wakefield (Yorks)—A new leaflet outlines the Sutcliffe hydraulically operated tub puller.

FOUNDRY SERVICES, LIMITED, Drayton Manor, Tamworth (Staffs)—What are hyper-eutectic aluminium-silicon alloys? Those interested in the answer to that question will find the October issue of Foseco Foundry Practice worth more than a cursory glance.

D.P. BATTERY COMPANY, LIMITED, Bakewell (Derbyshire)—The company has published an attractive 32-page booklet entitled "D.P. Kathanode Traction Batteries." Printed in purple and black, the booklet is lavishly illustrated and contains information which all intending traction battery purchasers should have at their side.

INCANDESCENT HEAT COMPANY, LIMITED, Cornwall Road, Smethwick, Birmingham—A paper, "Refractory Suspended Construction," presented by Mr. W. S. Sinclair, of the company, at a joint meeting of the Society of Furnace Builders and the Society of Glass Technology last April, is now available as a reprint (No. 51).

BAIRD & TATLOCK (LONDON), LIMITED, Freshwater Road, Chadwell Heath (Essex)—The "Torbal" precision balance is the subject of leaflet No. S.L.25, which gives detailed information of the first three models available from stock in the UK. The company is the sole authorized UK dealer and distributor for "Torbal" balances.

LESLIE & COMPANY, LIMITED, Peel Street, Kensington, London, W.8—"All Mod. Con. at the Colliery" is the title of a pictorial feature in the winter number of The Leslie Way. The pithead baths at Langley Park Colliery, built by the company, in 1955, are among the 91 such installations in the Durham coalfield. Fifty-six of them have been erected since the mines were nationalized. The feature gives an interesting impression of how the miner's lot has improved over the years.

COMMUNICATION SYSTEMS, LIMITED, Norfolk House, Norfolk Street, London, W.C.2—Publication No. 1450/CS describes the Type 58 private automatic telephone exchange designed for use in systems covered by Ministry of Power Certificate I.S. 1142 (Methane). The exchange operates from a 24-volt non-earthed battery supply and the arrangements are such that lines in the safe area can be connected directly to the exchange, and lines in the dangerous atmosphere need only the insertion of an approved safety coupling unit.

STANTON IRONWORKS COMPANY, LIMITED, near Nottingham—Combining an integrated blast furnace and foundry layout with a large concrete plant, the Stanton Ironworks Company presents an unusually interesting view of industry. And to tell its customers and other friends all about itself the company has produced a very attractive brochure, which gives an impressive outline of the Stanton plant and products. The company's medical and welfare amenities and its training centre for apprentices and junior operatives are also described. The photographs, some of which are in colour, are excellent.

FLUIDRIVE ENGINEERING COMPANY, LIMITED, Fluidrive Works, Worton Road, Isleworth (Middx)—Vulcan-Sinclair Fluidrive is used in a wide range of mixers and agitators for the processing of innumerable materials, from confectionery to carborundum and pigments to plastics. The December issue of Fluidrive News is devoted to an article on the process.

Film Introduction to Comminution

COMMINUTION—size reduction by breaking, grinding, or crushing—is the subject of a film produced for International Combustion, Limited, to give an understanding and appreciation of a field of engineering which plays a vital part in many industries. The subject is clearly presented and the film is admirably suited for instructional use in the training of students and technologists. The pattern of historical development, theoretical approach, research, testing, and application of breaking, grinding, and crushing processes is shown, animation being freely used throughout.

It can fairly be described as a non-promotional film. Indeed, it stands to the credit of industry that many organizations use their unique experience in this way to assist in the field of technical education and training. In this case, International Combustion has drawn on its wide experience in the manufacture of comminution equipment to provide a good general background which should stimulate interest in an intriguing engineering subject.

It is a 32-min. 16-mm. film in Eastmancolour and is directed by G. S. Fergusson and produced by Film House Productions, Limited. The film is available on loan through the Gaumont British Film Library.

Blair Athol Coal

A five-year option has been secured over the Blair Athol coalfield in the central coastal region of Queensland, Australia. This field, which is 130 miles in a direct line from the coast, contains a large deposit of coal which can be worked by open-cast methods. Reserves are estimated at about 180,000,000 tons of good quality coal. The possibility of generating power at Blair Athol or alternatively bringing the coal to a suitable site on the coast for power generation is under investigation.

MODIFIED

Charpy V-Notch Impact Test

FOR ALLOY STEELS

In the July, 1960, issue of Metal Progress D. L. Newhouse and B. M. Wundt describe how the Charpy V-notch impact test can be modified to simulate important characteristics of large spin-bursting tests. The authors are, respectively, supervisor, forging development, materials and processes laboratory, and structural engineer, large steam turbine generator department, General Electric Company, Schenectady, N.Y. The following is an abstract.

INVESTIGATORS of brittle fracture in large steel forgings have a big problem in reproducing the essential characteristics of such fracture in laboratory tests. These characteristics include a low nominal stress level and the virtual absence of fibrosity or ductility in the fracture. One solution to this problem is the use of bursting tests of large rotating notched disks. However, this method has drawbacks; it uses much material, is very expensive and therefore cannot be applied extensively.

Other tests also have limitations. For example, slow bend tests on larger notched specimens (3 sq. in., 20 per cent. deep notch, 0.005-in. root radius) correlate well with bursting test results, but like the bursting tests, they required much metal. Of course, the standard Charpy V impact test has been very useful. Correlations have been found between fracture strength and large disks and the 50 per cent. Fracture Appearance Transition Temperature (FATT). However, because of the small size of the specimen and the large radius of the notch (in relation to other dimensions), the side shear lips and fibrous "thumb-nail" under the notch form a much larger proportion of the total fracture area than they do in large notch disk and slow bend test fractures. Because of this much greater boundary deformation (compared with large spin and bend tests), Charpy V specimens absorb too much energy. Therefore, they are not suitable for determining fracture toughness, G_{co}.

To fill this gap the authors have devised a new test to evaluate fracture toughness with small test specimens. Briefly, standard Charpy V impact specimens are treated by nitriding. This produces a very hard, brittle-behaving layer, completely around the circumferential boundary surface of the notched section. The temperature required for this method, 525 deg. C., does not alter structure or properties of the Ni-Mo-V steel which was investigated. The brittle boundary has two effects. First, it reduces drastically the impact energy absorbed (apparently at all temperatures) and, second, it raises considerably the brittle-to-ductile transition temperature as measured by either energy or fracture appearance criteria. Results of tests on a Ni-Mo-V forging showed that at 24 deg. C. the energy absorbed was reduced from 30 to 6 ft.-lb., and the 50 per cent. FATT was increased by about 44 deg. C. Also, the mode of fracture of the nitrided impact specimen in the transition range is radically altered. The fibrous "thumbnail" under the notch is greatly suppressed, and the shear lips, which are usually observed on the free surfaces, are completely absent. The fracture, whether its appearance is crystalline or fibrous, is completely framed in the crystalline fracture of the nitrided case.

This drastic change in the fracture mode may be interpreted by assuming that the nitrided layer altered the boundary conditions for the fracture. Ordinarily, shearing deformation occurs at the unnotched surfaces. However, the thin and hard case results in a crystalline-appearing, brittle-behaving frame. It is as though the small (8 by 10 mm.) rectangular section of the standard Charpy V specimen were made a portion of a much larger section which exhibits a cleavage mode of fracture.

Probably, only those tests which exhibit largely crystalline fractures along with the energy values below 5 to 10 ft.-lb. for impact tests (or low maximum loads for slow bend tests) will be useful for estimating fracture toughness. This limitation is necessary because the definition of fracture toughness requires that the fracture, once started, be propagated by the release of elastic energy stored during the crack initiation period. The initiation process, on the other hand, must be facilitated. The test does this by proving that the brittle-behaving layer causes early formation and continuous enlargement of a fast-moving crack.

Estimates of fracture toughness, G_{co}, may be made from brittle-boundary impact energy data by dividing the energy expressed in in.-lb. by the area (sq. in.) enclosed by the brittle case.

While these observations were made on a limited number of tests, the application of the "brittle-boundary" principle offers much promise. Through this technique, impact values and the fracture appearance transition temperature can be obtained from nitrided Charpy tests. Such data can be used to advantage in selecting fracture-resistant alloys.

Mines Inspector Warns Against Complacency

WARNING against complacency—despite a fall in accidents in mines during late 1959 and in 1960—was given by Mr. R. H. Clough, HM Divisional Inspector of Mines for the North Western Division, when he submitted for discussion his report on the division at a meeting of the Lancashire Branch of the National Association of Colliery Managers in Manchester on November 23.

"With accidents in general, it is so very easy to point to what is termed the personal element," he said. "I ask myself many times why you can take a man who is trained, responsible, and of fair means of intelligence, but who in the end does some stupid thing which leads to his or someone else's injury."

Accidents were predominant on the face line, he said, mainly because there were more men there. Elsewhere they were diminishing in character. "I would like to say it is due to the extension in open caving, but I am not at all sure I can yet," he added.

Accidents at roadheads were, he said, usually precipitated by the movement of the key supports. He asked members to try using the short link bars to act as a deterrent. Although locomotive haulage was growing, Mr. Clough said he thought the chances of derailments would have decreased and better roads and tracks would have been the result. But this had not been the case, and the main trouble often stemmed from improvized arrangements—temporary haulage systems being rigged up without proper thought.

"The Most Dangerous Shot"

Accidents caused by explosions had reduced, said Mr. Clough, although not nearly enough. He commented: "The most dangerous shot that is ever fired is the ripping shot." He commended the electrical staffs of north-western mines for their comparatively good record of only a few accidents being caused by electricity. But he added: "I am a little alarmed to read reports of the failure to maintain flameproof apparatus in the condition it should be." He said he thought the real danger of fire with a transformer was caused by the amount of oil it contained.

The risk of accidents caused by the ignition of gas would be cut down, said Mr. Clough, by a sufficient amount of water being displayed on the cutting point of the jib. While discussing the subject of underground fires, he said the belt conveyor was still the most potential fire hazard. He strongly recommended the fireproofing of intakes.

He also posed the question: "Are we doing sufficient and effective belt patrolling? What we call patrol men, usually clean up. But what does matter is that the man who is cleaning up will concentrate his attention on the place where spillage is excessive, but the rest of the belt is left unattended." On airborne dust, Mr. Clough said: "I think you should keep in mind this business of the infrequency of the sampling, and think what could happen in between samples being taken."

Powered Telescopic Belt Tail End

INVENTION of Mr. L. A. Adcock, unit electrical engineer at Radford Colliery, Nottingham, a powered telescopic belt tail end enables a very speedy extension to the gate belt conveyor while pushing the fixed length stage loader into the face. This saves a labour cost on the conveyor belt extensions which are now in step with the face advance.

The tail end of the gate conveyor has been constructed so as to be strong, telescopic and yet sufficiently flexible to enable normal undulations to be easily negotiated. The telescopic arrangements have been effected with 2½-in. overall diameter tube supported by the 3-in. overall diameter tube which forms part of the rigid section.

The tail end has been built in four main units—the belt return drum with stage loader and three separate sections. These separate sections are extended by hydraulic pushing cylinders, which are so arranged that one pair is on the rear section, two pairs mounted back to back in the centre section, and a single pair of cylinders in the front section. When extending the tail end these pushing cylinders push against each other and then close up to each other to retract the tail end.

This structure has been found to be of sufficient strength to mount gate-end switchgear on the tail end and these switches are moved forward at the same time as the belt is extended.

WIGAN MINING STUDENTS' JOURNAL

FOUR papers on a wide range of mining aspects are contained in this year's Journal of the Past and Present Mining Students' Association of the Wigan and District Mining and Technical College. Mr. W. J. Adcock, head of the strata control branch of the National Coal Board, contributes an article on modern trends in strata control and Mr. Iain A. Williamson, of the Department of Mining and Geology, Wigan Mining and Technical College, covers some aspects of geological surveying.

Colliery incidents which have required the attention of rescue workers in the North-Western Division of the NCB are reviewed by Mr. A. Cunliffe, superintendent of the mines rescue station, Boothstown (Lancs), while the use of magnetic equipment in the mining industry, with special reference to coal preparation, is outlined by Mr. T. G. Hawker, technical manager, Rapid Magnetic Limited, Birmingham.

ROADWAY SUPPORT for MECHANIZED FACES

German Developments in Rapid Advance of Gate Roadways

Since the advent of mechanized mining, engineers have been faced with the difficulties of matching the rate of advance of gate roadways and stable holes with the high rate obtainable at the coal face. In a paper given in London, Mr. F. W. Paurat, of Johann Usspurwies G.m.b.H., outlined recent developments in Germany in which gate roadways are driven in advance of the face and supported by a yielding square system. Extracts from the paper are given below.

GREAT strides have been made by the mining industry during the last decade in the technique of working longwall faces, but in the drivage of gate roadways progress has been virtually at a standstill.

Although it has been possible to attain rates of advance on the face itself of 10 ft./day, and even 20 ft. and more have been obtained, it is generally impossible to maintain such speeds in gate roadways behind the advancing faces. Mining engineers are therefore inclined to think that extensive exploitation can best be carried out by means of retreating faces.

Advantages and Disadvantages of Retreating Faces

The retreating system can only be applied economically if no roadways repairs are necessary before coal getting begins. Retreating faces also mean high development costs, such as the investment of capital in roadways and special ventilation and the extremely high cost of losses of steel arches and associated material. What is the special reason for this high cost in steel losses? Withdrawal has to be carried out in the zone of major strata movement behind the face and losses are incurred because control of withdrawal is especially difficult in that supports left standing are hidden from view after a short time.

When considering the overall economy of underground operations, the retreating system only gives better results than the advancing system when the present difficulties of the advancing system, and especially those of the slower speed of advance, are used as a basis of comparison.

Lack of progress in the drivage of gate roadways is particularly incongruous when it is considered that, on a longwall face, equipped with power-loading and hydraulic props and using total caving, relatively few men are required; there are often far more men required for the accompanying gate roads, including the stable holes and road-side packs. The roadway support itself is still a series of traditional makeshifts which do not stand comparison with modern engineering standards and knowledge.

Intensified Use of Gate Roads

Cost of roadway maintenance is still extremely high, though statistics used in Germany are showing some tendency towards reduction of the cost of repairs in all roadways near the coal face. In Germany during 1951, 29 ft. of roadway had been driven per 1,000 tons of annual output, including 23.4 ft. of gate roadways. For every 1,000 tons of annual output produced, 167 ft. of roadways existed, among which were 55 ft. of gate roadways per 1,000 tons. In 1958, 32 ft. of roadways had been driven per 1,000 tons of annual output, including 26 ft. of gate roadways. For every 1,000 tons of annual output produced, 167 ft. of roadways existed, among which was 49 ft. of gate roadways per 1,000 tons.

It will be noted that the total length of roadways has remained the same, but the figures show an increase of about 10 per cent. in the annual drivage of gate roads, and a corresponding decrease of about 10 per cent. in the total length of gate roads existing, indicating the itensified rate of usage of gate roads.

If, on the other hand, the development of improved techniques in driving both long-life and short-life roads is considered, the following figures show how much the short-life roads will benefit. The repair shifts for all roadways have been reduced from a total of 9.68 manshifts/100 tons in 1951 to a total of 7.08 manshifts/100 tons in 1959.

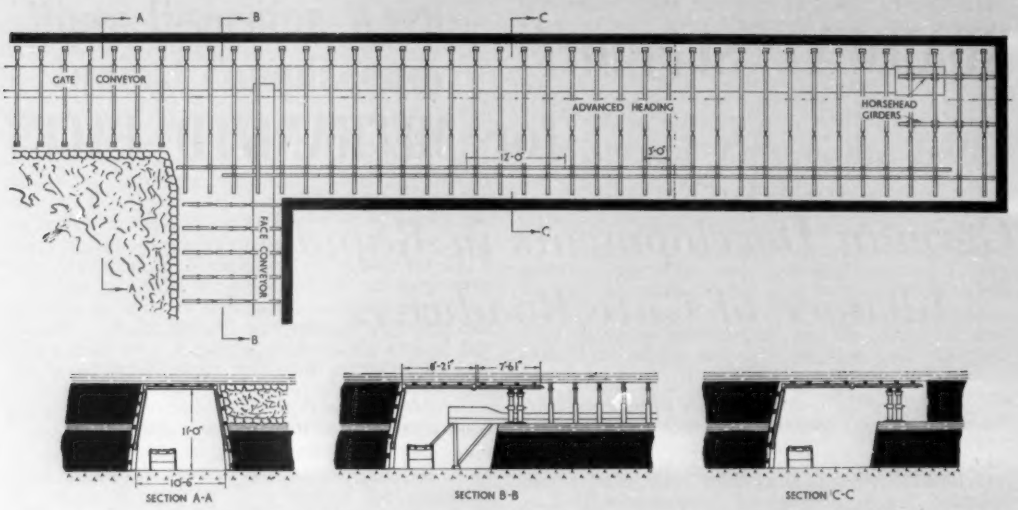


FIG. 1.—USSPURWIES SYSTEM OF ROOF SUPPORT FOR A ROADWAY DRIVEN IN ADVANCE OF A LONGWALL FACE. FOR SIMPLICITY, THE SYSTEM OF STRUTTING IS NOT SHOWN.

Of this reduction the part attributable to main roads was 1.03 manshifts/100 tons, *i.e.*, from 6.29 to 5.26 manshifts/100 tons, or a reduction of 10.6 per cent. on the total repair shifts in all roadways. In gate roadways and cross-cuts near the face the reduction was 1.57 manshifts/100 tons, *i.e.*, from 3.39 to 1.82 manshifts/100 tons, or a reduction of 16.2 per cent. on the total repair shifts of all roadways. Thus, the overall result of improvements in the drivage of short-life gates near the face is greater than in long-life roadways away from the face.

FIG. 2.—PRE-LOADING DEVICE FOR THE SUPPORTING LEGS OF AN ADVANCED HEADING.

As the development of support techniques for all roadways has taken place to the same extent, it may be concluded that the reason for the improvement in gate road costs has to be sought in the shorter time the gates near the face are standing, and that a short standing time is more than able to compensate for the unfavourable influence of the immediate strata movement resulting from coal mining. If this reasoning process be correct, it seems to be of special importance to the British mining industry, because in the UK the following figures show a greater amount of roadway drivages and roadway maintenance than in Germany.

In the UK in 1958, 37.7 ft. of roadway per 1,000 tons of output had been driven, among which was 37.4 ft. of gate roadways adjoining the face per 1,000 tons. The total length of existing roadways was 378 ft./1,000 tons, including 178 ft. of gate roadways adjoining the face per 1,000 tons. These figures are twice as high as those in Germany. Also, the life of the roadways is approximately double.

Developments in the Support of Advanced Headings for Mechanized Faces

Recently, developments have been made in Germany in the support of advanced headings for

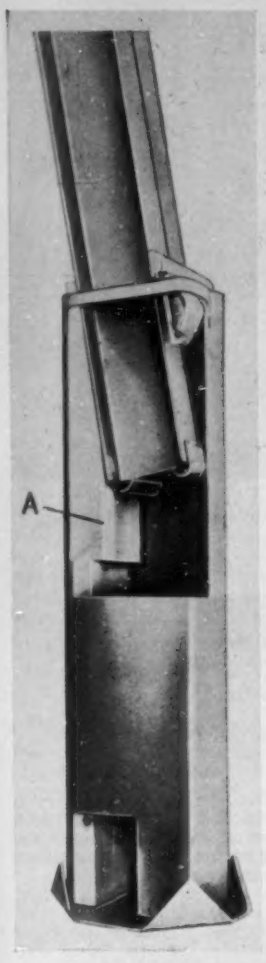


FIG. 3.—YIELDING BOX FOR SUPPORTING LEGS.

mechanized faces. A system of support has been designed by Johann Usspurwies G.m.b.H., whose British agents are the Hollybank Engineering Company, Limited, Beaconsfield (Bucks), in which a roadway is driven in the floor in advance of the face and is supported with yielding square supports, as shown in Fig. 1.

In the advanced heading the roadway bars are set on horseheads and the legs on the rib side are set by means of a pre-loading device (Fig. 2). The stable-hole bar is set and connected with a joint in the roadway bar to form a continuous support for the roof from the rib side to the face supports.

At right-angles to the stable-hole bar, longitudinal bars of about 8 or 9 ft. in length are set. These are supported by two rows of normal hydraulic props set on floor plates or, in the case of very weak floors, on floor bars. Fig. 3 shows the method by which the leg yields into a box between a wooden wedge and a brake-shoe. During yield the wooden wedge (A) is compressed. The compression properties of the pinewood wedge are such that the compression resistance of the original shape is almost unchanged when crushed to roughly 55 per cent. of its original thickness, while the frictional resistance remains constant.

This property of the wood is of special advantage when yield is effected by side pressure creating bending moments and jamming effects. The yield element fully retains its function because these jamming effects are avoided. However, this is only true within certain limits, which are reached when a yield box of 40 in. is connected with an arch leg of the same free length and loaded centrally to about 20 tons (Fig. 4).

Further limitation of this kind of support are as follow:—

(1) The support depends upon a minimum shear strength of the side of the dint. Since the system requires pressure to be transferred to the face side of the dint, it is not always possible to provide the necessary support, particularly if water is present.

(2) The stable-hole bars create difficulties if constructed as rigid lengths because this leads, with a free span of about 16 ft. 8 in., to bars of a size which men cannot handle. Thus, a hinge joint must be used and the limit of application then depends on the strength of the roof.

After the conveyor drivehead is advanced, the second arch leg is set at the face side of the roadway, again using the hydraulic pre-loading device and the stable-hole bar. Longitudinal bars are then removed and carried to the advance heading.

Advantages of the Usspurwies Support System

The main advantages of this system are that the roof is provided with early bearing support and no supports are removed before they are replaced by other support elements. Also, the conveyor drivehead can be advanced between the supports at its smallest width and the unsupported area is reduced to a minimum.

Separation of the face and its adjacent machinery from the front of the heading allows the work at these different points to be organized independently. Advanced headings also facilitate the proving of faults and the ventilation cross section is maintained up to the face.

Only advanced headings allow mechanized driving by drilling and loading machines (Fig. 5). The application of such machinery can lead to greatly increased roadway driving efficiency and create the necessary conditions for optimum performance. Daily extension of the roadway conveyor is not necessary and protection of the return end of the conveyor is not required as is necessary when the ripping lip is carried behind the face.

Dinted gates allow the conveyor drivehead to be fitted into the gate itself, thus reducing the length of the stable by about 10 ft. and making the drivehead more accessible for repairs or maintenance. In one German colliery an average advance of 8 in./manshift has been obtained in gate roadways driven by hand. In a mechanized

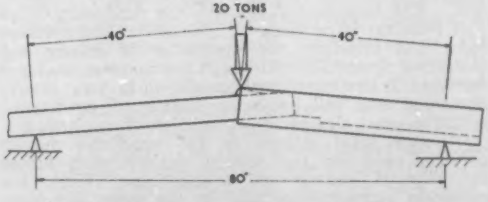


FIG. 4.—LOADING CONDITIONS FOR A YIELD BOX 40 IN. LONG.

retreating system 28 in./manshift has been obtained. Considering that the stable coal was worked by hand, this advance of 28 in. is effectively reduced by about 50 per cent. With the Usspurwies system rates of advance of 20 in./manshift, including the stable itself, have been obtained with mechanization of the drivage of the heading.

If the rate of advance of coal faces can be increased, the layout of underground workings may be influenced to reduce the long-life roadways in favour of the short-life ones; in other words, faces can be developed to travel longer distances in the same length of time.

Need for Changes in the Support Technique

Traditional methods of support at roadheads of mechanized faces form the largest bottleneck to the rapid advance of coal faces. Support comes before coal getting, and without special support, there is a gap in the mechanization of stable holes and the drivage of gate roadways.

Furthermore, it is most necessary to bring to the mining engineer's attention the intensive use of strata bolting and the necessity for driving more circular roadways. But it is even far more important that the mining engineer should be willing to revise his views on strata control.

FIG. 5.—MECHANIZED LOADING IN AN ADVANCED HEADING IN A GERMAN MINE.

Book Review

Mechanized Cutting and Loading of Coal. By R. Shepherd, Ph.D., and A. G. Withers, Ph.D. 328 pp. Odhams Press, Limited, Long Acre, London, W.C.2. £2 10s.

THIS is a very comprehensive survey of coal-cutting and loading machines. Unlike some textbooks dealing largely with discussions of machines, "Mechanized Cutting and Loading of Coal" does not read like a manufacturer's catalogue, but does, in fact, present a reasoned exposition of the application and benefits of the various equipment considered. Indeed, the authors devote two chapters to the all-important problem of choosing the right machine for the job in hand, including a discussion of design and operational problems.

In all, the book has 18 chapters; it is very well illustrated and accompanied by eminently readable text. The section dealing with the fundamentals of coal breakage is particularly informative, and develops from first principles the mechanics of cutting and ploughing operations. Although this mathematical and mechanical treatment is thorough, it is very clearly developed and will be easily understood by anyone with the most elementary knowledge of mathematics.

Of very great interest to the practising mining engineer, will be the section dealing with actual examples of underground installations. These are extremely representative and, in the main, the cases considered are based on published experiences both in Europe and North America. The electrical equipment associated with mechanized mining machinery is briefly dealt with, and sufficient attention has been given to the salient features of this topic to make the text valuable to the mining engineer lacking a detailed knowledge of electrical engineering.

While the main concern of Dr. Shepherd and Dr. Withers has been the factual presentation of modern developments in relation to one important aspect of coal-face mechanization, namely, the established constructional and operational details of modern coal-cutting machines, the final chapter considers possible future developments. The problems facing the British coal industry are briefly treated, together with the possible effects of market fluctuations on coal-face mechanization.

A highly desirable feature of the book is the inclusion of an up-to-date bibliography with each chapter. With the current accelerated rate of development in mining technology, it is perhaps inevitable that textbooks are occasionally out of date almost before publication. This book, however, bears the stamp of freshness and may be regarded as very desirable, if not essential, reading for mining engineers and students alike.

EXPANSION OF THE Siderúrgica Asturiana steelworks at Avilés, Spain, where a Renn-Krupp furnace is to be installed, has been declared to be of "national interest." Machinery will be imported free from customs duty, and a reduction of internal taxes is granted for 15 years.

NATIONAL ASSOCIATION OF COLLIERY MANAGERS

Golden Jubilee of Scottish Branch

MR. ROBENS AT CELEBRATION DINNER

HAVING been founded in 1910, this is the golden jubilee year of the Scottish Branch of the National Association of Colliery Managers, and the event was duly celebrated by a dinner held at the Newhouse Hotel, midway between Glasgow and Edinburgh, last Friday, Mr. William Duncan, president of the branch, presiding. Mr. Alfred Robens, chairman designate of the National Coal Board, was among the many guests.

Mr. Duncan gave a special welcome to branch past presidents attending the dinner. Seventeen past presidents were still living, he said, and 12 of them were present that evening. The first president (1910-12) was Mr. G. Gibb, and the second president was Mr. C. C. (now Sir Charles) Reid. Sir Charles had not found it possible to attend the dinner, but he had sent a message of congratulation to the branch, in the course of which he had said that if he had to live his life over again he would ask for nothing better than to be a colliery manager.

Extending a warm welcome to Mr. Robens, the president said that he had undertaken a task of great magnitude; he could be assured that he had the colliery managers in Scotland behind him.

Mr. Robens on His New Job

Mr. Alfred Robens, agreeing that the chairmanship of the National Coal Board was no light task, said he understood well what the next five years could mean. In the four months in which he was acting as deputy chairman he was visiting all the divisions for two or three days, aiming to meet personally management from Area general manager upwards. That was as much as one could do in two or three days, so that opportunities like the one presented that evening he accepted gladly, because they allowed him to meet the colliery managers in a way in which he would not be able to do by personal visits to their pits.

He congratulated Mr. H. H. Wilson on his appointment as national president of the association—the greatest distinction the association could give to any one of its members. He had been told that the NACM would hold its national conference in Edinburgh in 1961, and that it would deal specifically with safety in the mines. He regarded safety as mining's most important aspect and he was glad to see how well Scotland compared in this respect with other coalfields in the country.

What about the future of the industry, Mr. Robens asked. In the first place, they had to see that it was of the right size. "I am regarded in many quarters as an optimist when I say that the right size is one based on the sale of 200,000,000 tons of coal a year. There are people who say 185,000,000 tons or less. Coal is the bedrock of British industrial prosperity. We should not have more than one third of the energy requirements of our country coming from abroad. The total energy requirements will be 300,000,000 tons of coal equivalent by 1970. I think it would be a grievous injury to the security of this nation if more than 100,000,000 tons of coal equivalent had to be brought from the oilfields of the Middle East or anywhere else." he said.

"I am quite optimistic about the future of the coal industry," Mr. Robens continued. "I did not accept this appointment to direct the funeral arrangements of the industry." He counted himself fortunate in that he was taking over the chairmanship of the NCB in February, at a time when the vast investments in the industry over the past 10 years would show results, as, indeed, they were already beginning to show results. In Scotland, something like £64,000,000 had gone into new sinkings and major reconstructions since 1947. They were now starting to get a return from the investment that had been made, and it would not be long before the rest of the programme had been completed. They could therefore begin to look for the results that an investment of that size would ensure. "We have to get our coal at higher standards of efficiency than we are getting it today. If we do we can win the battle against oil. There is not the slightest doubt that the greatest psychological shot in the arm is to be working and showing some profitability. If we can go on improving the output per manshift we will begin to turn the corner, as I believe you in Scotland have already done."

Coal sales had gone away up this year, Mr. Robens said. They would be selling nearly 200,000,000 tons of coal in 1960. Industry was requiring more and more fuel, and they must secure their share. The weather had helped this year, but it had been weather plus, and the plus had been getting coal's share of new customers. The electricity industry had taken another 6,000,000 tons this year. The coke ovens would have taken by the end of the year another 3,000,000 tons, and an extra 1,000,000 tons would have been sold to the domestic market. Exports were going the right way. The industry had sold abroad 1,500,000 tons

more than last year, and total exports for the year would be about 5,250,000 tons. "These are facts to give you confidence that we are selling more coal in places where it does us most good," said Mr. Robens.

"Productivity in British industry over the past three years has gone up by 7 per cent., but in the coal industry in the same period it has risen by 12 per cent. We are the best industry in the country so far as increased productivity goes, and we should be proud of that."

Mr. L. R. Milligan, deputy chairman of the Scottish Divisional Coal Board, a past president of the Scottish Branch, and a past national president of the NACM, responded to the toast to the Scottish Branch proposed by Mr. Robens. Mr. J. O. M. Hunter, QC, proposed a toast to "The Scottish Coal Industry," to which Mr. R. W. Parker, chairman of the Scottish Division, responded. The guests were welcomed by Mr. W. B. Stewart, vice-president, Mr. J. M. Caldwell, president of the Mining Institute of Scotland, replying.

Salted Explosives are Safer

RESEARCH has confirmed that the addition of from 10 to 20 per cent. of ordinary salt to "permissible" explosives used in coal mines increases their safety factor, according to a report by the United States Bureau of Mines.

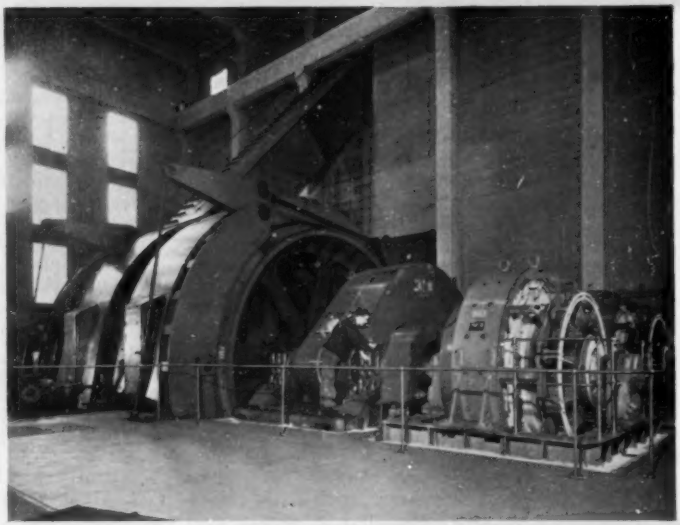
As a result of the research, undertaken in co-operation with the Institute of Makers of Explosives, one major manufacturer already has changed his formulæ. He now adds 10 per cent. of fine salt to his entire line of "permissible" explosives.

Mr. Marling J. Ankeny, director of the Bureau of Mines, points out that the bureau does not claim credit for the idea of adding salt to explosives; the practice originated in Europe. However, the bureau has proved, in a series of 2,400 test explosions, that permissible explosives with salt additives are safer and that fine salt is more effective than coarse salt.

A copy of the report (No. 5683, "Reducing the Incendivity of Permissible Explosives by Sodium Chloride") can be obtained from the Publications-Distribution Section, Bureau of Mines, 4,800 Forbes Avenue, Pittsburgh 13, Pa., USA.

AEI Mine Winders at Mosley Common

NEW AEI motors installed during the summer in the winder house of No. 3 shaft at Mosley Common Colliery (Lancs) have raised the power of this winder to 9,000 h.p. Since it was recommissioned, the heavy plant division of Associated Electrical Industries, Limited, has received an order for another winder, to be installed in No. 4 shaft. Like the two winders recently installed at Agecroft Colliery, in the same Area of the North-Western Divisional Coal Board, the No. 4 shaft winder will be driven by a 2,500-h.p. d.c. motor supplied by mercury-arc rectifiers.



FOUR AEI 2,250-H.P. MOTORS DRIVE THIS WINDER IN NO. 3 SHAFT AT MOSLEY COMMON COLLIERY, NEAR MANCHESTER.

Mosley Common Colliery is some eight miles from Manchester, and modernization work has been going on there since 1944. Its estimated life is 100 years, and potential annual output is 1,000,000 tons. No. 3 shaft, the coal-winding shaft, has been widened to give it a diameter of 22 ft., and coal is at present being wound from a depth of 580 yd., although next year the winder will operate from a depth of 950 yd.

The No. 3 winder is now driven by four AEI 2,250-h.p. d.c. motors supplied by two motor-generator sets, each driven by a 2,500-h.p. synchronous induction motor. The motors work from an 11-kV., three-phase, 50 c/s supply, with an auxiliary supply of 620 V. The winder operates two 12-ton skips in balance, and from the 950-yd. depth a single wind will take 78.7 sec., at a rope speed of 60 ft./sec. The mechanical parts were manufactured by Vickers-Armstrongs (Engineers), Limited.

Metallurgical Patents in the US

Some Recent Inventions

DESCRIPTIONS of metallurgical patents given below have been taken from details published in the Official Gazette of the United States Patent Office.

Gauge-control System for Multi-stand Strip Mill

In combination with a strip mill, having a plurality of roll stands, with a motor driving each stand and a generator for supplying current to each of the motors, a means is provided for continuously gauging the strip leaving the last stand and means controlled by the gauging element simultaneously oppositely modifying the excitations of the generators of stands adjacent the entrance and exit ends of the mill, respectively.—2,949,799.

Cooling Arrangement for Electric Furnace

A crucible adapted to enclose heat-producing means, comprises vertically extending cylindrical concentric inner and outer shells separated by an annular space, means closing the ends of the space and co-operating with the shells to define a shell water jacket shorter in length than the inner shell. A base closure comprises upper and lower plates having central portions spaced apart and defining a generally cylindrical base water jacket between them, which includes a portion of the upper base plate projecting within the lower end of the inner shell and to a substantial distance above the lower end of the shell water jacket, so that the entire end portion of the inner shell exposed to the heat-producing means is directly cooled by the shell water jacket.

The base water jacket has a diameter substantially greater than its axial length, a plurality of water inlets extending through the lower plate into the base water jacket at points spaced radially from the axis of the base jacket and substantially to the middle of the axial length, inlets being provided on their inner ends with nozzles directed at angles to the radial lines extending thereto from the axis to circulate the water in the jacket with a swirling motion. A water outlet is provided in the lower plate and disposed at the axis and opening axially from the cylindrical jacket.—2,950,094.

Moulding Machine Upset

A moulding machine comprises a base having a track mounted thereon, a moulding head supported over a portion of the base and track, a boom, slidably supported on the moulding head. A hopper is supported on the boom, and means to support a flask on the track, the boom being slidable to bring the hopper into position over the flask when it is supported on the track out from under the head, the hopper being adapted to direct moulding material into the flask. Means provide for moving the flask on the track to a position under the head which comprises means to compress moulding material in the hopper and the flask, and means to hold the hopper in position under the head while the flask is moved out from under the head and the hopper whereby moulding material in the flask is levelled even with the top edges of the flask after having been compressed.

The means to support the boom on the head comprises two pairs of vertically spaced rollers supported on the head, the boom having track mounted thereon and adapted to be supported between the spaced rollers and horizontally movable relative thereto.—2,951,270.

Carbon-faced Conveyor Roll for Silicon Steel Strip

A conveyor roll for silicon steel strip comprises a steel hub, a cylindrical carbon sleeve arranged concentrically of the hub, the hub and sleeve having facing cylindrical surfaces spaced radially relative to each other, and a corrugated steel sheet secured to the hub for rotation therewith and mounting the sleeve in a concentric position relative thereto. The sheet has corrugations resiliently engaged with the hub and sleeve surfaces along lines extending axially thereof and providing a driving connection between the hub and sleeve.—2,950,097.

Metal Feed Structure for Continuous Casting Apparatus

In a metal feeding structure for continuous casting apparatus, a combination comprises a mould having an inlet end and an outlet end, a nozzle through which molten metal is fed to the inlet end of the mould. The nozzle extends longitudinally into the inlet end of the mould and has an outer surface smaller in sectional size than the interior of the mould and a peripheral rim portion at the end thereof within the mould which projects radially outwardly from the outer surface and is in closely spaced relationship to the mould. The design includes elements spaced peripherally of the nozzle within the mould and having surfaces peripheral to the nozzle whose sectional dimension is greater than that of the rim portion at the end of the nozzle. The elements are located longitudinally of the nozzle between the rim portion at the end of the nozzle and the inlet end of the mould and in spaced relationship to the rim portion for supporting the nozzle within the mould at a position in which the rim portion at the end of the nozzle is substantially uniformly spaced from the mould.—2,951,271.

Method and Apparatus for Producing Grain-oriented Ingots

A method for casting grain-oriented ingots consisting essentially of iron containing up to about 5 per cent. silicon, comprising the steps of supporting a grain-oriented metal seed slab corresponding in composition to that of the ingot in spaced relationship to a heat exchanger, casting molten metal upon the surface of the seed slab remote from the heat exchanger, causing the seed slab to become molten, conducting a portion of the molten metal into the space between the seed slab and the heat exchanger to substantially fill the space, extracting the superheat and latent heat from the metal filling the space to thereby form a band of high heat conductivity between the seed slab and the heat exchanger and extracting

heat from the remainder of the molten metal through the seed slab by means of the heat exchanger.—2,951,272.

Split Mould for Metal Pig-casting Machines

A mould for a pig-casting machine comprises an elongated inverted V-shaped body having opposed curved side body portions connected along one long edge of the body, the curved body portions each curving downwardly and outwardly of the centre of the body. Flat end plates span both body portions, the long free edges of the body portions having flat faces, the body portions being enlarged and rounded on the inner surfaces thereof, adjacent the edges thereof, the body portions and end plates constituting two halves of two separate adjacent mould cavities, the curved body portions having convex undersides providing heat radiating surfaces for the mould. Bearing sleeves are provided on the corners of the body along one side thereof and bearing sleeves on the corners of the body along the opposite side thereof, the latter bearing sleeves being offset inwardly from the first-named sleeves, the mating of adjacent elongated bodies providing a pig mould with a thickened centre portion. —2,952,054.

Hot-top Construction

A hot top, has a casting, a refractory member secured to the casing and formed of particles of refractory material, a wiper member having a first portion thereof located between the casing and the refractory member and having a plurality of openings therein overlapping a surface of the refractory member. The wiper member has a second portion extending outwardly beyond the casing in position to engage the walls of an ingot mould, and an adhesive disposed between the inner portion of the refractory member and the wiper member and extending within the openings, the adhesive serving to tightly bond the wiper member to the particles of the refractory material and to accurately position the wiper member with respect to the casing and the refractory member.—2,952,055.

Apparatus for Setting Hot Tops in Ingot Moulds

Apparatus for inserting a hot top into an ingot mould comprises a frame including a bottom platen of such size to be receivable within the mould, a pair of supports pivotally mounted on opposite sides of the platen adjacent the bottom thereof and extending outwardly therefrom. Means provide for moving the supports around their pivots from a generally horizontal extended position outwardly of the platen to a retracted position, the supports being adapted to receive the bottom edge of the hot top when in extended position. An upper platen slidably mounted on the frame, includes a pair of opposed downwardly extending plates and a horizontal shoulder on the outside of each of the plates adjacent the top thereof, the shoulders being adapted to engage the top of the hot top. Means provide for moving the upper platen in a vertical path.—2,952,886.

CONDITIONING IRON ORE
with Petroleum Sulphonate

SURFACE chemistry involved in the conditioning of iron ore by a combination of sulphonate and fuel oil is insufficiently understood and probably extremely complicated, state Kun Li (B.Eng.), R. W. Livingston, and L. K. Lemke in the conclusions of a paper on "Flotation Conditioning of Iron Ore with Petroleum Sulphonate" published in the October, 1960, Bulletin of the Institution of Mining and Metallurgy.

Lack of basic data, they consider, precludes any attempt to speculate intelligently on the detailed mechanism, but some of the data presented do, in their view, bring out several significant facts. The most important is that the process involved in the conditioning of iron ore, under the given conditions, begins with all solids completely floatable and ends up with only ore particles floatable and silica particles non-floatable. This is exactly the converse of what is generally believed to take place—that is, from a completely non-floatable condition to a partly floatable condition.

The approach in the present paper provides a means of translating laboratory data into plant practice. For practical purposes, a rate equation developed in this work can be used in conjunction with appropriate material balances for the design of a batch or a continuous conditioner. In either case, care must be taken to ensure dynamic similarity between the laboratory cell and the plant equipment since the rate constants employed are not only a function of the chemical nature of the system but also of its dynamic conditions.

It is, the authors contend, beyond doubt that the task of selecting reagents and operating conditions will be much easier if the basic mechanism of the process is understood, and more fundamental work directed towards mechanism studies is definitely needed. Work concerning several aspects of conditioning studies is being actively continued and the results will be available later.

Trade Unions

Membership of registered unions of employees fell during 1959 from 8,405,000 to 8,352,000, a decrease of 53,000 as compared with a decrease of 188,000 in 1958. Their total income, however, rose by £375,000 to £27,431,000, of which £23,675,000 was subscribed by members. The expenditure of these unions increased during 1959 by £2,063,000 to £25,675,000. The major factor accounting for this was an increase in the expenditure on dispute benefits from £1,383,000 to £2,681,000, the greater part of which may be attributed to the strike in the printing industry. The figures are contained in the Report of the Chief Registrar of Friendly Societies for 1959, Part 4, Trade Unions (Stationery Office, 3s.).

PHILATELY and the

IRON AND STEEL INDUSTRY

By H. HOCKE

COMPLETE integrated steelworks have been used on a surprising number of stamps issued by various countries. A large stamp of the Saar (1921, 25 M.) shows the Dillingen steelworks, while a later issue (1927-32; 2, 3, and 5 fcs.) illustrates the Brubach steelworks. To commemorate the National Steel Company's expansion campaign, Brazil, in January, 1957, issued a stamp showing part of the Volta Redonda steelworks. The design includes the pouring of hot metal as seen under a magnifying glass. This shows very clearly the miniature fireworks of flying sparks from the bubbling molten metal.

Poland's largest and most modern steelmaking plant, the Nova Huta steelworks, near Cracow, now has three blast furnaces, eight open-hearth furnaces, a hot rolling and a cold rolling mill, together with auxiliary installations. Production

A FINE EXAMPLE FROM POLAND.

in 1959 was to be 1,400,000 tons of steel, or almost as much as the total 1937 production of steel for the whole country. This will rise in 1965 to about 3,500,000 tons, when Nova Huta will account for 40 per cent. of Poland's total output of steel. There are at least two stamps (1954, 25 gr., and 1959, 1.55 zl.) showing parts of these steelworks.

The Skoda works, Pilsen, celebrated its 100th anniversary last year. It was founded in 1859 by Count Waldstein as a small engineering workshop for the production of steam-driven factory equipment. Emil Skoda, a young engineer at the time, bought the works 10 years later. The range of products was extended after the first world war to include aircraft, heavy electrical equipment, and locomotives. The original plant of the Skoda works was preserved and remains a fully integrated steel and heavy engineering production plant. A pre-war Czech stamp shows an aerial view of the works. It is issued with a decorative label between stamps (June, 1938, 50 h.). Bohemia and Moravia, during the Nazi occupation, also issued stamps showing part of the Pilsen works (1941, 1.20 k.) and the steelworks at Mährisch Ostrau (1940, 4 k.). To celebrate this anniversary of the Skoda works Czechoslovakia issued a set showing a turbine rotor and a casting and the now famous winged arrow, the Skoda trademark.

The Esch-sur-Alzette steelworks appears on a number of Luxembourg stamps. Two recess-printed stamps (1922-34, 2 fcs.) give a general view, while later, a larger photogravure stamp in three colours shows its blast furnace, with an I-beam section in the foreground (May, 1956, 2 fcs.).

Commonwealth countries showing steelworks are few. India has issued two. One is the Rs. 10 high value (January, 1955, Rs. 10), and the other, a comparatively larger stamp, commemorating the 50th anniversary of the Tata steelworks (March, 1958, 15 np.). This stamp also shows the head of J. N. Tata, the founder. The Australian steelworks are represented indirectly by a stamp commemorating the sesquicentenary of the Broken Hill Proprietary Company, Limited. This company is one of the few which runs it own fleet of iron-ore carriers, of the "Iron" class.

The Diosgyör steelworks is shown on an air stamp of Hungary (October, 1950, 70 fi.), and, to celebrate the opening of Hwang-Hai steelworks, North Korea issued a light blue 10 wn. stamp (May, 1958). The stamp designs of Korea are usually not of the generally high standard of other countries, poorly printed, and issued without gum.

Sisak steelworks is represented by a green 10 din. stamp of Yugoslavia (March, 1958). This stamp shows a furnace with its skip hoist and stoves.

Russia has issued numerous stamps illustrating various aspects of the steel industry. One stamp in particular (March, 1932-33, 20 k.) shows the integrated works layout at Magnitogorsk.

It is rather disappointing to find that our own Post Office has not attached sufficient importance to our iron and steel industry to warrant even one pictorial stamp showing some iron and steel aspect. There must be at least as much demand for pictorial stamps as there has been for regional issues.

Views on Nationalization

In "Nationalized Industries in a Mixed Economy" John Hughes explores the relationship between the nationalized and private sectors. In analyzing the present subordination of the public sector he examines investment policy, the attitude to substitutes, wages policy, the handling of contracts, and pricing policy. "Government intervention in nationalized industry policies, particularly in pricing, has been dominated by short-run considerations," he says. "On occasion these have been primarily, and sordidly, political." The booklet is published by the Fabian Society, 11, Dartmouth Street, London, S.W.1, price 4s. 2d., post free.

Forthcoming Events

DECEMBER 12

Lincolnshire Iron and Steel Institute: Meeting at the North Lindsey Technical College, Kingsway, Scunthorpe, at 7.30 p.m. "The Technique of Vertical and Horizontal Rolling," by T. Hessey, technical sales manager, Brightside Foundry & Engineering Company, Limited, Sheffield.

Society of Instrument Technology (Manchester Section): Meeting at the College of Science and Technology, Sackville Street, Manchester, at 6.45 p.m. "History of Pneumatic Control," by G. E. Twist.

Institute of Marine Engineers (West of England Section): Meeting in the Small Engineering Lecture Theatre, University of Bristol, University Walk, Bristol 8, at 7.30 p.m. "Heatless Repairs to Fractured or Broken Castings," by N. Tinwell.

Junior Institution of Engineers (Sheffield and District Section): Meeting at Livesey Clegg House, 44 Union Street, Sheffield 1, at 7.30 p.m. "Economics in Industry," by G. H. Herringshaw.

Institution of Production Engineers (Sheffield Section): Meeting at the Grand Hotel, Sheffield, at 7.15 p.m. "British Railways' Welding of Railway Rolling Stock," by G. Walton.

Institution of Production Engineers (Leeds Section): Meeting at the Hotel Metropole, King Street, Leeds 1, at 7 p.m. "Statistics as an Aid to Production Engineers," by C. Loveluck.

Institution of Production Engineers (Newcastle-upon-Tyne Section): Meeting at the Rutherford College of Technology, Northumberland Road, Newcastle-upon-Tyne, at 7 p.m. Film evening.

DECEMBER 13

Institution of Structural Engineers (Scottish Branch): Meeting at the Institute of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 7 p.m. "The Use of Timber as a Structural Medium," by J. H. Jasp.

Institution of Chemical Engineers (North Western Branch): Meeting at the Blossoms Hotel, Chester, at 7.30 p.m. "Analytical Instrumentation of Process Gas Streams," by J. C. Hawkes.

Combustion Engineering Association (Southern Region): Meeting at the Criterion Restaurant, Piccadilly Circus, London, W.1, at 10.30 a.m. Discussion on "Standards of Boiler Instrumentation" (to be opened by R. P. Braby).

Institution of Electrical Engineers (South-East Scotland Sub-centre Committee): Meeting at the Carlton Hotel, North Bridge, Edinburgh, at 7 p.m. "Energy Resources of Scotland," by J. Henderson and C. L. C. Allan.

DECEMBER 14

Midland Counties Institution of Engineers: Meeting at the West Nottinghamshire Technical College, Derby Road, Mansfield. "The Development of the Vertical Drum (Dranyam) Shearer Loader," by R. L. J. MacRae and C. W. High.

Royal Society of Arts: Meeting at John Adam Street, Adelphi, London, W.C.2, at 6 p.m. "The Function of Trade Unions in Industry and Commerce," by W. J. Carron, president, Amalgamated Engineering Union; Viscount Knollys, chairman, Vickers, Limited, in the chair.

Institution of Electrical Engineers (Sheffield Sub-centre): Meeting at the University, Mappin Street, Sheffield, at 6.30 p.m. "The Determination of the Electrical Characteristics of an Arc Furnace," by J. Ravenscroft.

Institution of Electrical Engineers (Supply Section): Meeting at Savoy Place, London, W.C.2, at 5.30 p.m. "A Basis for Short-circuit Ratings for Paper-insulated Cables up to 11 kV.," by L. Gosland and R. G. Parr.

Institution of Mechanical Engineers: Meeting at 1, Birdcage Walk, Westminster, London, S.W.1, at 6 p.m. James Clayton Lecture: "Machine-tool Research, Design, and Utilization," by Dr. D. F. Galloway.

DECEMBER 15

South Wales Institute of Engineers: Meeting at Park Place, Cardiff, at 6 p.m. "Experiments in South Wales with an Instrumented Coal Plough," by L. Finkelstein, W. T. A. Morgans, C. D. Pomeroy, and V. M. Thomas.

North East Coast Institution of Engineers and Shipbuilders (Tees-side Branch): Meeting at the Cleveland Scientific and Technical Institution, Corporation Road, Middlesbrough, at 6 p.m. Film show.

North Wales Metallurgical Society: Joint meeting with the Society of Instrument Technology at the Blossoms Hotel, Chester, at 7 p.m. "Instrumentation in Steelmaking," by Dr. P. Bacon.

Institution of Production Engineers (Reading Section): Meeting at the George Hotel, King Street, Reading, at 7.30 p.m. "Electronic Data Processing Allied to Production Engineering," by F. W. Purchall.

Institution of Production Engineers (Glasgow Section): Meeting at the Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow, C.2, at 7.30 p.m. Open discussion.

Institution of Plant Engineers (Blackburn Branch): Meeting at the Castle Hotel, Blackburn, at 7.30 p.m. "The Measurement of Gas," by A. C. Smith.

Institution of Mechanical Engineers (Nuclear Energy Group): Meeting at 1, Birdcage Walk, Westminster, London, S.W.1, at 6 p.m. "The Impact of a Three-fuel Economy."

Institution of Mechanical Engineers (North-Eastern Branch): Meeting at Stephenson Building, Claremont Road, Newcastle-upon-Tyne, at 6.15 p.m. "Power Flow and Pressure Measurement in Pump Testing," by L. Young and R. A. Nixon.

Institution of Mechanical Engineers (Yorkshire Branch): Meeting at the University, Leeds, at 6.30 p.m. "Some Developments in the Nuclear Field," by Dr. A. T. Bowden.

DECEMBER 16

West of Scotland Iron and Steel Institute: Meeting at 39, Elmbank Crescent, Glasgow, C.2, at 6.45 p.m. "Recent Developments in Refractories for Iron and Steel Making," by R. Malcolm.

North East Coast Institution of Engineers and Shipbuilders: Meeting at the Mining Institute, Newcastle-upon-Tyne, at 6.15 p.m. "The Institution," by the secretary.

Junior Institution of Engineers: Meeting at Pepys House, 14, Rochester Row, Westminster, London, S.W.1, at 7.30 p.m. Induction of president and presentation of awards.

DECEMBER 19

Institution of Mechanical Engineers (Scottish Branch): Meeting at the Institute of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, C.2, at 7.30 p.m. James Clayton Lecture: "The High-speed Heavy-duty Diesel Engine, its Development, Design, and Application," by Dr.-Ing. Ekhart Schmidt.

National Association of Colliery Managers

DECEMBER 13

Yorkshire Branch: Meeting at the Miners' Welfare Hall, Brodsworth, at 3 p.m. "Coal Ploughing in the Beeston Seam at St. John's Colliery," by B. Hatherton, C. Meryett, and A. S. Harris.

DECEMBER 19

Midland Branch: Meeting at the Denman's Head Hotel, Sutton-in-Ashfield, at 6.30 p.m. Paper by F. Turton, manager of Silverhill Colliery.

Standards Withdrawn

WITHDRAWAL of the following British Standards is announced in the November issue of BSI News:—

BS640: 1935. Bare rod or wire electrodes for metal-arc welding wrought iron and mild steel.

BS1121: Methods for the analysis of iron and steel.—Part 1: 1943. Determination of sulphur, phosphorus, and lead. NOTE.—Determination of sulphur was replaced by 1121 Part 1A in 1957. Determination of lead was replaced by 1121 Part 40: 1960. For determination of phosphorus see 1121 Part 9: 1948 (as amended November, 1957). Part 15: 1949. Determination of silicon in plain carbon steels, low alloy steels and cast irons.

BS1271: 1945. Proof test for creep quality of carbon steel plate of boiler plate quality.

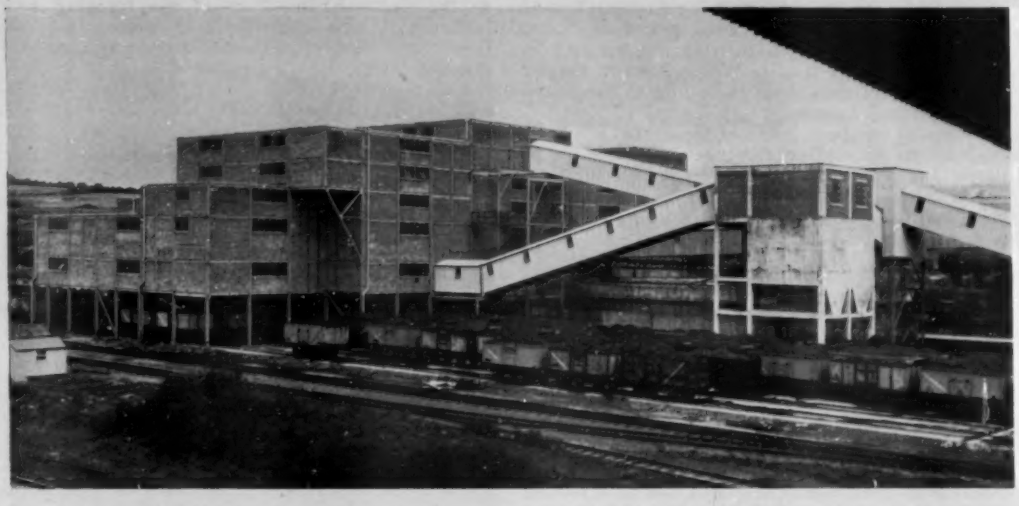


FIG. 1.—GENERAL VIEW OF THE GEC COAL PREPARATION PLANT AT CYNHEIDRE COLLIERY.

CYNHEIDRE COLLIERY'S COAL PREPARATION PLANT

Associated with the development of Cynheidre Colliery is a £1,000,000 coal preparation and dirt crushing plant, designed and installed by the Fraser & Chalmers Engineering Works of the General Electric Company, Limited, Erith (Kent). Although the new plant (shown in Fig. 1) has resulted in the closing of at least part of the surface plants at nearby Crosshands, Great Mountain, and Blaenhirwaun collieries, it will, when up to maximum capacity, contribute greatly to the cleaning of coal in the No. 1 (Swansea) Area of the South-Western Divisional Coal Board.

OPERATING on the two-process principle (illustrated in Fig. 2), the coal preparation plant has a maximum capacity of 400 ton/hr. A complicated dirt crushing plant, with a capacity of 120 ton/hr. can feed dirt back to the pithead for underground stowage, or to a bunker for ultimate disposal on a refuse tip.

As part of the contract GEC has supplied a 24½-ton capacity side-discharge wagon tippler (Fig. 3); hoisting, lowering, and changing a wagon takes 120 sec. thus providing the capacity to keep the washery fully supplied with coal from external sources.

The tippler consists essentially of a cradle upon which the wagon is placed, supported between a pair of chain-driven cradle arms. Side and top bolster cushions hold the wagon in position during the tipping operation and a pair of counterbalance weights reduce the amount of power needed.

From the pithead, run-of-mine coal is discharged on to a conveyor system, fitted with automatic weighing equipment, feeding raw coal into the wagon tippler hopper. Coal is extracted from the hopper at a uniform rate of 400 ton/hr. by means of a Sherwen vibrating feeder and directed on to a belt feeding No. 1 primary raw coal screen which is of the shaker type.

This double-deck screen separates the material into three sizes—plus 6 in., 6 in. to 3 in., and minus 3 in.

The below 3-in. fraction is conveyed direct to the two secondary raw coal screens, while the 6-in. to 3-in. is fed into a Pegson Gyrasphere set to reduce the product to below 3 in. Meanwhile, the plus 6 in. from the primary raw coal screen is discharged on to a 48-in. wide picking belt where, after removal of tramp iron, it is reduced to below 6 in. by a Pegson gyratory crusher. The products from both Pegson crushers are then directed to No. 2 primary raw coal screen. This screen is fitted with a 3-in. dia. mesh with the "throughs" passing by conveyors to the two secondary raw

coal screens, and the oversize being directed through the Pegson Gyrasphere. Small pieces of tramp iron are prevented from entering the washery by the siting of a 65-in. dia. Witton-Kramer magnet suspended over the conveyor leading to the secondary raw coal screens.

Provision has been made in the conveyor system feeding the secondary raw coal screens for the below 3-in. raw coal to be diverted into an emergency bunker in the event of a stoppage in the washery. In this way continuous working of the pit is not interrupted. If this emergency outloading is carried out, the coal can be reintroduced into the coal preparation circuit by means of the wagon tippler provided.

Secondary Raw Coal Section

Two secondary raw coal screens of the shaker type are installed and they are fitted with $\frac{1}{4}$-in. dia. perforated plates. The oversize from these screens, 3 in. to $\frac{1}{4}$ in., is conveyed to No. 1 Chance cone, and the throughs, $\frac{1}{4}$ in. to 0, are laundered to a battery of eight Sherwen vibrating screens fitted with $\frac{1}{16}$-in. square mesh. From this battery of screens the $\frac{1}{4}$-in. to $\frac{1}{16}$-in. fraction is discharged into No. 2 Chance cone, while the throughs flow to the slurry basin. Part of the spraying and laundering water used on these screens is taken from the effluent pit, so economizing in the use of clarified water.

The two 12-ft. dia. Chance cones (Fig. 4) deal with different sizes of raw coal. No. 1 Chance cone receives 3-in. to $\frac{1}{4}$-in. fractions and is arranged for a three-product separation, namely, clean coal, middlings, and refuse. Clean coal from the cone is desanded and dewatered on a shaker-type screen; the middlings product is desanded and dewatered on a partitioned section of the clean-coal desanding screen; and the refuse, from the underside of the cone, is desanded and dewatered on another shaker-type screen.

The $\frac{1}{4}$-in. round to $\frac{1}{16}$-in. square raw coal being treated in the No. 2 Chance cone is also graded into three products, clean coal, middlings, and refuse. Two shaker-type desanding and dewatering screens handle the clean coal, while separate desanding and dewatering shaker-type screens are provided for the middlings and refuse.

From No. 1 Chance cone the clean coal product is conveyed to sizing screens where it is graded into French nuts, stove nuts, "Stovesse," and beans and collected by boom loaders for ultimate

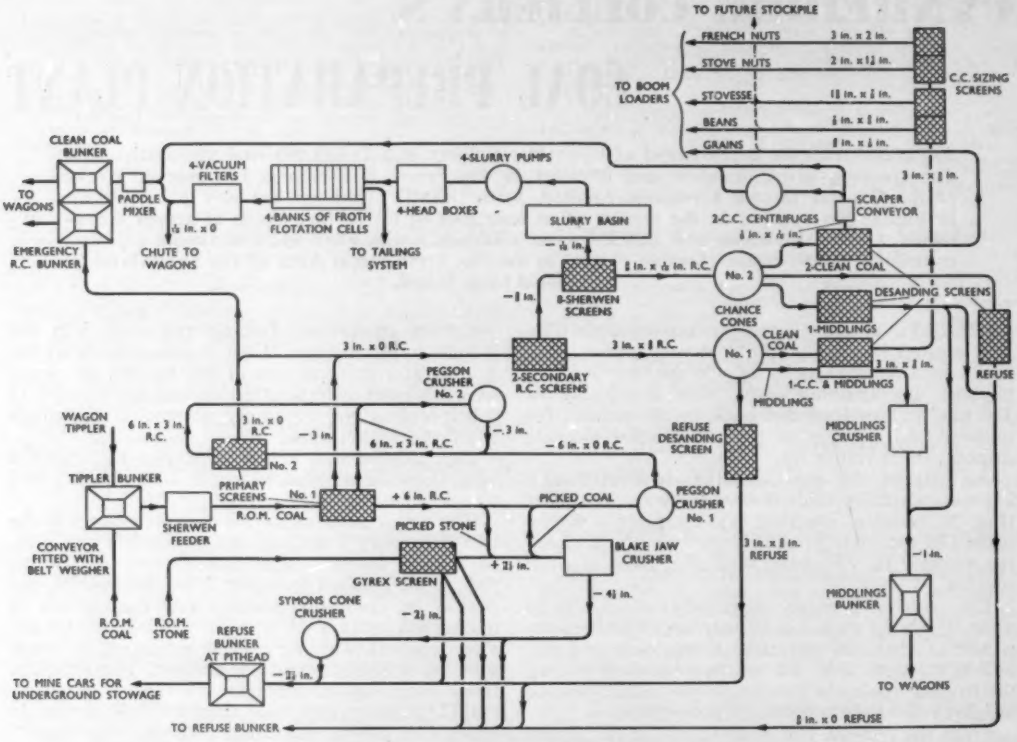


FIG. 2.—COAL AND DIRT FLOW DIAGRAM.

FIG. 3.—24½-TON WAGON TIPPLER IN OPERATION AT CYNHEIDRE COLLIERY.

discharge into wagons. Although the equipment has not been included, it is possible to raise the discharge end of the boom loaders so that they feed on to a further belt for discharge to a ground stockpile.

Arrangements allow for the removal of any degradation (*i.e.*, below ¼ in.) from No. 1 Chance cone.

This degradation is laundered to the effluent pit from which it is pumped up and passed over the eight Sherwen screens feeding No. 2 Chance cone.

The clean coal product from No. 2 cone is separated into two sizes on the desanding screens. The grains, ¾ in. to ¼ in., are conveyed to the appropriate boom loader (Fig. 5), and the fines fraction, below ¼ in., is fed through a 50-ton/hr. scraper conveyor to two 100-ton/hr. centrifuges, one of which is a standby. These centrifuges extract the moisture from the small coal which is then joined by the filter cake and passed through a double-paddle mixer to a bunker, ready for disposal by wagons. If required, the fines from the clean coal desanding screens can by-pass the centrifuges.

Middlings from both Chance cones are fed through desanding screens to a 30-ton bunker for loading direct into wagons. Those from No. 1 Chance cone are, however, first reduced to below 1 in. by a Pennsylvania granulator.

The below $\frac{1}{16}$-in. square raw coal in the slurry basin is pumped to the head boxes of the froth-flotation plant, which serve to regulate the amount of slurry delivered to the flotation cells. Wedge wire at the top of the boxes allows material to be returned to the Sherwen screens for resizing. The underflow from the head boxes is delivered to the flotation cells for treatment, the clean coal concentrates then being laundered to a battery of four rotary vacuum filters for dewatering. These filters are arranged in line, so that the filter cake can be collected and discharged on to the belt feeding the double-paddle mixer or by a chute direct into wagons. The filtrate is laundered to the clarifier.

Tailings from the froth-flotation cells are passed over high-speed dewatering screens, the material over ½ mm. going on to the ¼-in.-to-0 belt feeding the refuse tip storage bunker, and the sludge being laundered to the 105-ft. dia. clarifier.

Four diaphragm pumps extract the thickened sludge from the underside of the clarifier and deliver it to two rotary vacuum filters for dewatering, or, in the case of an emergency, to a sludge sump.

The $\frac{1}{16}$-in.-to-0 cake from the filters is conveyed direct to the refuse tip storage bunker. At the same time the diaphragm pumps can also deliver the thickened sludge through a buffer tank to three filter presses for dewatering. From these

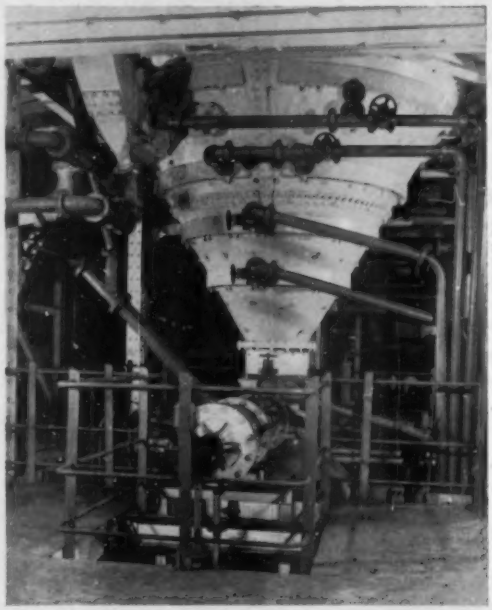


FIG. 4.—BOTTOM OF ONE OF THE TWO CHANCE CONES, SHOWING THE REFUSE DISCHARGE GATE.

presses the filter cake is then passed to the ⅜-in.-to-0 refuse belt feeding this bunker.

Run-of-mine dirt is first sized by a double deck Gyrex screen. After sizing, the over 2½-in. round is passed by a picking belt to a Blake jaw crusher set to reduce the dirt below 4½ in. round. It is further reduced to 2½ in. by a 60-ton/hr. Symons cone crusher before joining the washery refuse and natural pit stone below 2½ in. This is then fed back to the refuse bunker at the pithead. Protection of the Symons cone crusher is afforded by a 43-in. dia. Witton-Kramer suspended magnet situated above the head pulley of the conveyor feeding it.

The 3-in. by ⅜-in. refuse extracted from No. 1 Chance cone, after desanding and dewatering, is conveyed to the refuse bunker at the pithead ready for extraction.

Refuse from No. 2 Chance cone, being below ⅜ in., is too small for underground stowage and is therefore taken by belts to the refuse tip bunker. By suitable flopper devices the washery refuse, the natural run-of-mine dirt below 2½ in. and the crushed dirt below 4½ in. can also be fed direct to this bunker.

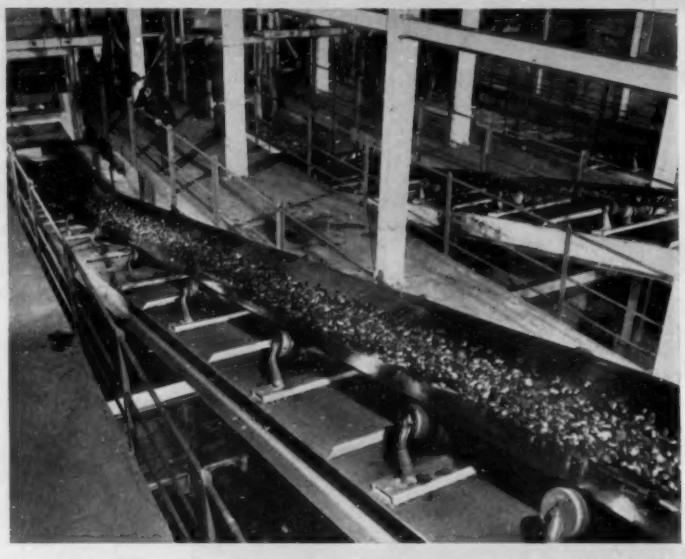


FIG. 5.—SOME OF THE FIVE LOADING BOOMS INSTALLED AT CYNHEIDRE COLLIERY.

Acknowledgment is made to the National Coal Board for its assistance in the preparation of the article and for permission to take the photographs, which are reproduced by courtesy of the General Electric Company.

French Coal Production in 1959

OUTPUT of coal in France during 1959 amounted to 91,860,000 tons of raw coal, which, after treatment, gave 58,723,000 tons of saleable coal, according to a statistical review of the French collieries in the October issue of the Revue de l'Industrie Minerale.

A total of 33,744,000 manshifts was worked below ground and 16,382,000 at the surface.

The output per manshift was 4.38 tons at the face, 1.732 tons underground, and 1.17 tons underground and surface.

The gross output of raw coal came to 29.7 per cent. from coal faces with backfilling and 62.7 per cent. from faces with caving.

The average advance per day of all coal faces was 4 ft.; 39.4 per cent. of the production was won by explosives, 3.5 per cent. by compressed-air blasting, 19.4 per cent. by coal cutters, and 10.5 per cent. by coal ploughs.

Of the underground locomotives in operation during 1959, 77 were of the compressed-air type, 379 battery driven, 269 trolley type, and 1.005 diesel driven. Coal preparation is extensively applied in France. 83.8 per cent. of the gross output being washed, of which 51 per cent. was passed through piston jigs and 27.5 per cent. through driers.

Tribute to a Past President

TRIBUTE to a past president who gained national repute as a mining engineer and administrator was paid at the annual meeting of the North of England Institute of Mining and Mechanical Engineers when the secretary, Mr. Arthur Walker, read a memoir of the late Major Stanley Walton-Brown. The meeting was held at the Neville Hall, Newcastle-upon-Tyne, on Saturday. Mr. J. S. Carson, the new president, delivered his inaugural address.

Institute awards were presented by Mr. William Welsh, the outgoing president. G. C. Greenwell bronze medals were awarded to Mr. J. T. Harding and Mr. R. R. G. P. Jackson for their paper, "Experience with Power-loading and Self-advancing Supports at a Northumberland Colliery." The George May prize of 30 guineas was awarded to Mr. J. C. Wilkinson, student, for his paper, "The Application of the Armstrong Airbreaker at Havannah Mine." The Austin Hopkinson Medal was awarded to Mr. C. E. Weatherell, associate, on the results of the Institution of Mining Engineers' examinations for associate membership in 1959.

New Equipment and Products

Resiliently Mounted Vibratory Screen

LIGHT type of screen which has many new design features, the most important being the resilient mounting of the entire screen body in bonded rubber bushes, has been developed by the Saxon Engineering Company, Limited, Fenton, Stoke-on-Trent.

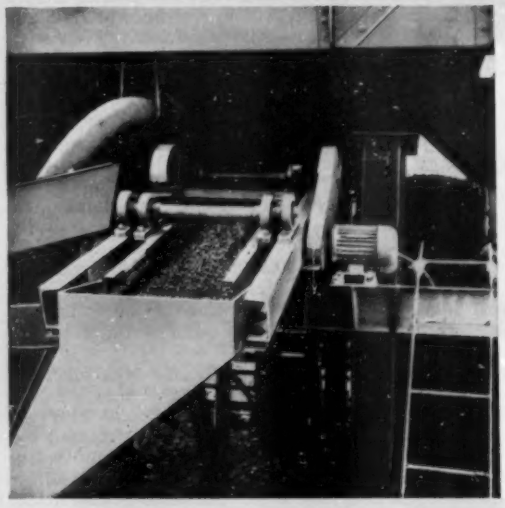


FIG. 1.—RESILIENTLY MOUNTED VIBRATORY SCREEN.

All sizes up to 10 ft. by 4 ft. are available with a maximum power requirement of 3 h.p. The amplitude of vibration is variable and, where required, models can be supplied arranged for double-deck screening and also for mobility.

When dealing with fine materials where the moisture content could cause blinding, the screen is readily adapted for thermal deck heating which positively prevents this condition. This type of screen is already in use in the ceramic industry effectively handling fine clay with a moisture content of 10 per cent. For certain requirements of the chemical industry the screens are made in stainless steel. This resiliently mounted vibratory screen also has many applications in the mining, gas, and quarry industries. Fig. 1 shows one of these screens at a quarry rejecting sand $-\frac{1}{4}$ in. (wet screening).

Photo-electric Warning System

NOW being produced by Hird-Brown, Limited, 244, Marsland Road, Sale (Ches), is a photo-electric cell unit that will operate only when the light beam is interrupted in one direction. Should an object pass through the beam in the reverse direction nothing will happen. Only one photocell housing is used to achieve this result and no relays are involved.

The new technique can be incorporated into a photo-electric warning system introduced by the company for giving an audible or visible alarm when a change occurs. The warning system can be used to monitor moving webs of any material, including paper, polythene, rubber, and steel, and immediately indicates when a break or tear occurs or a required loop disappears. In other uses it will show when persons or objects pass a fixed point or will act as a height or level gauge. The warning can be set on site to sound continuously or to stop ringing after five to 15 sec. The equipment is suitable for operation indoors or outside under wide temperature variations and can be used in smoky conditions. It is suitable for beam lengths of up to 75 ft.

As well as giving a warning signal, a range of recorders is available to record the times of breakage, etc., and further contacts are provided for the operation of emergency stops. Several beams can be connected to a single control unit. Fully adjustable mountings are provided on the projector and receiver.

The equipment will operate for long periods without attention and, beyond cleaning the lens occasionally, no maintenance is required.

"Sherpa" MK II Dump Truck

ILLUSTRATED in Fig. 2 is the Scammell "Sherpa" MK II dump truck, a newcomer in the field of 9-cu. yd. struck-capacity dump trucks. Similar in appearance to the established MK I, the new unit is intended solely for duties on-site.

Among features common to the "Sherpa" series are hydraulically operated power steering, the independent air operation of front and rear brakes with

FIG. 2.—NEW "SHERPA" MK II DUMP TRUCK.

a total friction area of 628 sq. in., the dust-proofing of brake servos, gearbox, and rear axle, a 24-V electric system, and heavy-duty dumper-type fully floating driving axle with taper-roller bearings and epicyclic hub reductions. The design embodies sub-assemblies and components used in other Scammell dump vehicles and transporters, this standardization of parts in the matter of replacements being of obvious advantage.

The "Sherpa" MK II is marketed by R. Cripps & Company, Limited, Lenton, Nottingham, the sole concessionaires in the UK for the Scammell range of dump trucks. Distribution and servicing arrangements will be handled at the company's three depots in Nottingham, Manchester, and Shildon.

Hopper Door

DESIGNED to eliminate the friction between material being stored in a hopper and the outlet door, the F.P. patent door (Fig. 3), introduced by F. P. Patent Closure Devices, Limited, Denison House, Vauxhall Bridge Road, London, S.W.1, permits the hopper outlets to be partially opened to control the flow of material.

The door consists of a rubber or steel apron introduced between the material in the hopper and the door

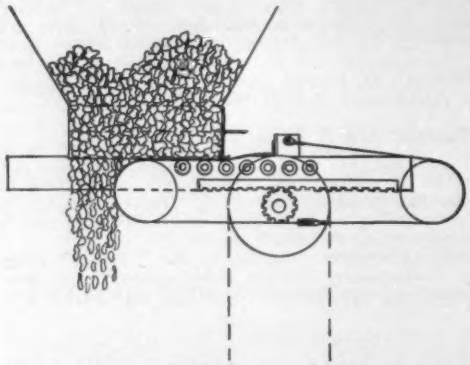


FIG. 3.—DIAGRAM SHOWING THE PRINCIPLE OF THE F.P. DOOR.

frame. The apron can easily and quickly be withdrawn from the hopper mouth, permitting a regulated opening of any size through which the material may be unloaded.

The F. P. patent door is being made in standard sizes to suit openings 12, 16, 18, 24, and 36 in. wide, but can be modified to suit any specification. The door is self-contained and fixing can be done on site.

A Centenary Diary

Next year marks the centenary of the foundation of J. H. Fenner & Company, Limited, power transmission engineers, of Marfleet, Hull, and, in anticipation of that event, the company has issued an elegant centenary diary, suitable for use on the desk at the office or at home. Mr. S. B. Hainsworth, the managing director, tells us: "We shall hope to celebrate our centenary year in a number of suitable ways, but most of all by achieving, in 1961, a greater degree of development in the organization than we ever before managed to compress into one year."

Underground Maintenance in the US

MECHANIZATION in British mines is regarded by many mining engineers as the key to prosperity in the industry. Since the introduction of machine mining productivity has steadily improved and recent trends in manpower wastage may well enforce the need for even greater strides in the application of machinery in order to maintain output with a reducing labour force. Even with the present rate of production of coal by mechanization there are many signs that maintenance staffs at collieries are unable to service adequately the equipment and machinery upon which more and more reliance is being placed. The answer to these problems lies not only in increasing the maintenance staff but also in providing facilities for improved efficiency so that more machines are maintained with a minimum labour force.

The American mining industry, already highly mechanized, has realized the need to provide efficient maintenance facilities and in the October issue of Coal Age an account is given of an improved underground workshop at the mine of Mathies Coal Company, Finleyville, Pa.

Located 8 miles in the workings at a junction of two main entries and employing 31 maintenance specialists, the new centre is responsible for all major rebuilding as well as shop work required by daily maintenance. The shop is divided into work areas, which are each capable of rebuilding machines of a specific type. Provision is also made for the repair of underground locomotives.

The new underground workshop not only provides ample work space for all types of maintenance but also has many machines that are found only in surface repair shops. For example, a lathe, two drill presses, a hydraulic press, three power grinders, and four electric welding sets are provided. Lubricants, purchased in bulk and stored at the surface, are piped underground by gravity through a borehole situated near the surface store.

The shop has a complete store stocked with parts and materials for almost all repair jobs. To speed up repairs at the face, the shop also keeps a number of unit assemblies in readiness. A stock of over £12,000 is carried by the store and the storeman is responsible for recording the movement of all parts and materials. A daily list of parts withdrawn from stock is compiled by each maintenance specialist, who leaves it with the storeman for transfer to a card-index system.

The specialists have access to a complete file of wiring diagrams, service manuals, and catalogues and details of modifications in equipment are available to aquaint the specialist with design changes. A planned maintenance scheme, based on past experience and mining conditions, is operated by the company and it is found that most machines are overhauled once a year and maintenance at the face is minimized.

Law Cases

QUALTER, HALL

No Longer Exempt Private Company

IN a summons by Qualter Hall & Company, Limited, Barnsley (Yorks), which manufactures and instals colliery equipment, Mr. Justice Cross held that on the true construction of the relevant section of the Companies Act, 1948, the company had ceased to be an exempt private company within the meaning of Section 129 (4) as from July 22, 1955. Qualter, Hall was incorporated in 1910 and before 1955 its authorized capital was £115,000 of which £90,000 was issued. All the shares were held by 13 members of the Hall family and the company was clearly an exempt private company.

In 1955 the capital was increased to £165,000 and reserves of £75,000 were capitalized and applied in paying in full at par 50,000 unissued £1 6½ per cent. cumulative preference shares and 25,000 unissued £1 "A" ordinary shares. These were sold by the shareholders entitled to them to five finance institutions.

Giving judgment, Mr. Justice Cross said the Board of Trade had taken the view that from 1955 the company had ceased to be an exempt private company because paragraph 7 of the seventh schedule of the Act only applied to cases in which banking and finance companies provided capital for the company. It was submitted by the Board of Trade that this did not apply to cases such as this where the shares were bought from shareholders who were entitled to have them allotted to themselves.

He accepted the submissions of the Board of Trade as to the meaning of the words "providing capital" in the heading to paragraph 7 ("Exception for Banking or Finance Company providing Capital"), which the board had contended defined the scope of the paragraph.

ICI Loses Tax Relief Appeal

APPEAL by Imperial Chemical Industries, Limited, from a decision of Mr. Justice Wynn-Parry regarding relief to be allowed in assessing UK tax on dividends received by the company from its subsidiary, ICI Australia & New Zealand, Limited, which had already been taxed in Australia, was dismissed with costs in the Court of Appeal.

ICI received its first dividends—of £93,511—from the subsidiary in 1954-55. Australian tax of £64,836 was payable on them. Under the British system of assessment the dividends had to be assessed twice for UK tax—in 1954-55 and 1955-56—and the company contended that relief in respect of the Australian tax should be allowed in both assessments. Mr. Justice Wynn-Parry had held that it could be used only once as a credit against UK tax.

The Master of the Rolls, agreeing with the decision, held that the clause relating to double taxation relief on Australian income was too plain to admit the company's argument—that every time there was an annual assessment one could bring in the credit, even though it had been brought in previously against taxation on the same sum.

Leave to appeal to the House of Lords was granted.

Winding up of ABC Coupler & Engineering

PETITION for the compulsory winding up of A.B.C. Coupler & Engineering Company, Limited, Wolverhampton, presented by F. H. Lloyd & Company, Limited, Wolverhampton, judgment creditors for £17,500, has been adjourned for a week by Mr. Justice Pennycuick in the Chancery Division. Mr. Ralph Instone, for the petitioners, said he understood that some shareholders opposing the petition might be in the course of coming to an arrangement with his clients which would be satisfactory to them if they were going to be paid out.

For the respondent company and the opposing creditors, Mr. A. C. Sparrow asked for a fortnight's adjournment so that he could file evidence. He was anxious not to put in unnecessary evidence if an arrangement which would terminate the petition materialized in the coming week. There were quite substantial matters to be gone into and, he said, the amount of opposition was "pretty considerable."

£3,000 DAMAGES FOR MINER

DAMAGES of £3,000 were awarded in the Court of Session to Mr. James Bell, miner, whose left knee and leg were injured when he was crushed between two rakes of hutches in Reddochhill Colliery (West Lothian) in 1958.

The National Coal Board admitted liability, contesting the action only on the ground that the sum sued for (£8,000) was excessive. Mr. Bell claimed that, as a result of the accident, his left leg was now shorter than his right, and he could not walk without the aid of a stick.

"THESE WERE MEAN, despicable offences," Mr. W. A. B. Goss, presiding at the West Riding Quarter Sessions, told Francis Clifford Stafford (51), colliery contractor, when he sentenced him to nine months imprisonment for stealing and cashing brass pay checks from Rossington Colliery (Yorks). Stafford was found Guilty of stealing the checks from two fellow miners and collecting their wages. He denied the charges.

Coalfield News

Durham Breaks Output Record Yet Again

FOR the third successive week productivity in the Durham Division of the NCB in the 47th week reached a record level. The overall average of 23.14 cwt. per manshift was 0.05 cwt. more than the previous week's record. In the corresponding week of 1959 overall productivity averaged 22.30 cwt. per manshift. At the face, output per manshift reached 65.93 cwt. compared with 65 cwt. per manshift in the same week of 1959.

Dawdon Colliery had its best output for 30 years last week when a total of 21,250 tons of coal was raised and weighed. More men were employed when output last reached this level, but the pit has been reconstructed since nationalization.

AFTER 50 YEARS' SERVICE at Broomhill Colliery (Northumberland), Mr. Matthew Turnbull, fore-overman, retired on Saturday.

FLOODS in South Wales this week closed two pits, Maritime and Nantgarw. There was considerable absenteeism among Rhondda Valley miners who stayed at home to help clear up.

SHIPMENTS of coal and coke from the South Wales ports last week totalled 51,542 tons, an increase of 8,656 tons on the previous week but 18,386 tons less than in the corresponding week of 1959.

THE 50-ft. pit spoil heap at Hetton (Co. Durham), is to be levelled to make way for an industrial site. The heap is still smouldering below the surface 25 years after the Hetton Lyons Colliery was closed.

TALKS are taking place between the NCB and the NUM regarding the impending closure of Broomhill Colliery (Northumberland). The pit is working on a single shift system, producing about 500 tons of coal a day.

UNDER A NCB scheme, water from Britannia Colliery, Pengam (Mon), is to be pumped out and part of it used by the board for various schemes in the area. Rhymney Water Board is also to use some of the water for industrial concerns.

OFFICIAL EXPULSION of the Yorkshire Winding Enginemen's Association from the National Union of Mineworkers became effective on Monday. The 560 winders in the association refused to accept a merger with the NUM to which they were affiliated.

COAL FILLERS at Manvers Main Colliery (Yorks), who stopped work on Monday of last week over a complaint of an alleged cut in allowances, resumed work on Monday of this week. All the 2,500 men employed at the pit were eventually involved.

PRESENTATION was recently made to Mr. RALPH DIXON, who retired from Fryston Colliery (Yorks), after being its head ambulance man for over 40 years. He has been a member of the St. John Ambulance Brigade for over 50 years and is a corps officer.

DURING an informal visit to Blyth (Northumberland), power station, members of the Northern Regional Board for Industry were told that the Central Electricity Board was now using 8,400 000 tons of coal annually from Durham and Northumberland coalfields.

REFERRING TO oil as "our common enemy," Mr. Wileman, miners' agent for the South Derbyshire district, invited retired miners of Rawdon Colliery at the annual dinner arranged by a joint colliery management and union committee, last week, to do all they could in persuading their local authority representatives responsible for building to stick to solid fuel.

FRENCH MINERS' trade union has accepted an invitation to send a football team to play a Scottish team at the Miners' Gala Day in Edinburgh on May 1, 1961. This will be the first time in the history of the gala that a football team from another country has taken part.

FIFTY-ONE Durham miners who remained accident-free during the third quarter of the year, have won £30 vouchers, in a competition held in connection with the Durham Divisional Coal Board's Greater Safety Campaign. Main prizes for the fourth quarter will be £20 vouchers.

NEW Rose Heyworth drift mine (Mon), formed by the integration of Rose Heyworth and Cwmtillery collieries at a cost of some £3,000.000, came into full production on Monday without any ceremony. Mr. Richard Wood, Minister of Power, was invited to open the mine, but he was unable to do so.

SHIPMENTS OF COAL from Sunderland in the first 10 months of the year totalled 1,769,735 tons, compared with 1,808,318 tons in the corresponding period of 1959. The River Wear Commissioners report that the gap, caused by the seamen's strike, between this year's figure and last year's is now narrowing.

DARBY AND JOAN-TYPE CLUB, opened on Tuesday at Biddulph (Staffs), for retired miners of Victoria Colliery, is the second of its kind in North Staffordshire. A similar club was opened earlier this year at Sneyd Colliery and a suggestion is to be made to Florence Colliery welfare committee that a similar club should be opened there.

WORRIED at the number of evictions taking place from National Coal Board houses, Rotherham Rural Council has expressed its concern to Mr. W. H. Sales, chairman of the North-Eastern Divisional Coal Board, and has asked for a meeting with NCB officials to discuss what it claims is a change in the Board's policy on evictions.

WARNING that December is frequently a difficult month for serious accidents at collieries is included in the Christmas message to employees of the Durham Divisional Coal Board, which was included in their pay packets last week. Dr. W. Reid, divisional chairman, writes: "The challenge can be met if each in his own sphere is prepared to work to the highest standard of safety on the job."

Floods Hinder Production

FLOODS, which devastated many homes this week, took their toll on industry as well. Production was brought to a standstill at the new £4,000,000 ore preparation plant and the 85 coke ovens of the Stanton Ironworks Company, Limited, Ilkeston (Derbyshire), but after two days of mopping-up work was back to normal. Four feet of flood water swirling round the machines of Derby Cables, Limited, stopped production and the 500 employees were sent home.

Some of the production departments at the Ickles (Yorks) works of Steel, Peech & Tozer, branch of the United Steel Companies, Limited, were flooded to a depth of over 2 ft. when rain caused the River Don to overflow on Sunday. Jessop-Saville, Limited, and the English Steel Corporation, Limited, were also affected, but there was no hold-up in work. Water affected the rollers at Clay Wheels Rolling Mills, Limited, Neepsend, and the fire brigade was called to pump them clear.

THE COAL TRADE

CONTINUED bad weather, which has in some parts of the country aggravated transport problems, the approach of Christmas, and inadequate stocks are factors which are giving a good many merchants a tough time. Efforts made to build up stocks against an almost certain peak demand in the early months of 1961 have been constantly frustrated either by lack of the requisite qualities or delays in railway deliveries. Doubtless most customers' requirements will be met, but merchants in almost all areas will not be sorry for the Christmas "breather."

LEICESTERSHIRE

Conditions during the past week have followed the pattern set at the start of the new winter prices. While there has been an adequate supply of coal of some grades, others have been exceptionally short. Most distributors have found themselves putting some coal into stock and being unable to fulfill orders for other grades. The public continue to demand the qualities they nominate and although the National Coal Board offers and sends substitutes, these are not acceptable, in many instances, to consumers.

There is a lively demand from the bagging section, but there appears to be reasonable quantities of low grade fuel which is normally used for this class of trade. Best coal remains exceptionally scarce with the exception of a few grades which do not appear to be popular. Supplies of all grades of domestic coke continue to be readily available and good deliveries are being made. "Coalite" and "Rexco" are subject to delay but there are good supplies of "Cleanglow" and "Warmco."

There is little change to report in the anthracite and dry steam coal position. Despatches from South Wales are still subject to considerable delay. It is feared that near Christmas delays by rail are bound to increase. It is reported that ovoids are now being offered at some depots but there does not appear to be any market for these particular types at present. "Phurnacite" continues to be popular with consumers operating solid fuel cookers and closed stoves, though orders are subject to delay.

There is little to report from the central heating market. Pressure is now being exerted as most of the space-heating consumers are now operating fully. Substantial stocks appear to be held and the space heating market is exceptionally good for the time of the year.

In the industrial fuel market some deterioration is noticed. Supplies at producing units have not been readily available, and, although substitutes are offered, industrial consumers remain adamant in nominating the quality they require. There are reports of delay locally and there are no quantities available now outside current production and it is an effort in some instances to obtain full programme tonnages.

Derbyshire Miners Fare Better on Selling Back Coal

DERBYSHIRE miners, who have their own buy-back arrangement with the National Coal Board on concessionary coal, got rather more than £42 7s. a year which is to be paid under the recent national agreement between the NUM and NCB, said Mr. H. W. Wynn, secretary of the Derbyshire Area of the union, last week. As far as he knew the Derbyshire arrangement would continue to operate.

The Area council has recommended that deafness should be treated as an industrial disease and should come within the Industrial Injury Act.

Coal Consumption Up by 8,077,000 Tons

TOTAL domestic consumption of coal in the first 47 weeks of the year, at 31,753,000 tons, shows an increase of 1,671,000 tons on the corresponding period of 1959. The electricity industry has used 4,261,000 tons more coal, bringing its total for the period to 44,900,000 tons, and the coke ovens have increased consumption by 2,631,000 tons to 25,673,000 tons.

With the iron and steel industry and the engineering and other metal trades maintaining last year's consumption, only the railways are using less—8,600,000 (9,231,000) tons. Exports show an increase of over 2,250,000 tons and total consumption for the year has risen to 181,334,000 (173,257,000) tons.

There were 584,740 wage-earners on colliery books on November 26, against 636,990 on November 28, 1959, the numbers engaged at the coal face being 221,000 and 245,640 respectively. Total absenteeism (all workers) in the week ended November 26 was 13.84 per cent., compared with 13.50 per cent. in the week ended November 28, 1959. Output at the face was 4.096 tons and overall 1.442 tons in the week ended November 26, compared with 3.887 and 1.392 tons in the week ended November 28.

The following tables gives (in tons) the output of saleable mined coal by division in the week ended December 3, and the tonnage lost through all causes (holidays, disputes, and go-slows):—

Division.	Week ended December 3, 1960.		Week ended December 5, 1959.
	Total output.	Tonnage lost.	Total output.
Scottish	351,700	6,700	388,200
Northern (N&C) ..	246,100	500	260,000
Durham	473,900	200	486,800
North-Eastern ..	840,800	27,200	886,300
North-Western ..	263,400	—	288,200
East Midlands ..	918,700	1,500	937,100
West Midlands ..	289,000	1,100	315,500
South-Western ..	393,400	10,000	429,100
South-Eastern ..	33,200	—	33,900
Great Britain—			
Deep-mined coal ..	3,810,200	47,200	4,025,100
Other deep-mined (including licensed mines) ..	39,000	—	55,000
Open-cast coal ..	155,500	—	181,800
TOTAL	4,004,700	47,200	4,261,900

NEW ADDRESS of the Barnsley office of Hugh Wood & Company, Limited, mining equipment manufacturers, of Gateshead-on-Tyne, is 10 Regent Street, Barnsley (telephone: Barnsley 3117).

Obituary

The death has occurred of Mr. B. A. TEASDALE, former partner and general manager of A. Teasdale & Sons, which, under licence from the NCB, works Wigglesworth No. 2 Colliery (Co. Durham). He was 61.

The death occurred on Wednesday of last week of Mr. ALBERT BONNER, director of the Phoenix Iron Works Company, Limited, Littleborough (Lancs). He was 49 and started as an apprentice with the company of which he became a director in 1938.

The death has occurred of Mr. J. FULLER APPLEBE, who in 1919 founded J. F. Applebe & Company, Limited, shiprepairers, of Hull. He was managing director until his retirement three years ago and was a member of the Institute of Marine Engineers.

Mr. THOMAS GRAHAM, general secretary of the Amalgamated Union of Foundry Workers, died on Saturday at the age of 55. When Mr. James Gardner retired in 1958, Mr. Graham, who had been the union's assistant secretary for many years, succeeded him as general secretary.

Mr. ROBERT A. THORP, chairman and managing director of J. Thorp & Son, Limited, steel plate workers, of Derby, died suddenly last week at the age of 59. He had been a director of the company since 1925, and became chairman and managing director 10 years ago, on the death of his father. The firm was founded by his grandfather in 1888.

Mr. DAVID W. T. EVANS, development engineer of the Chesterfield Tube Company, Limited, has died from injuries he received in a road accident. He was 58. He had been associated with the Tube Investments, Limited, group for 24 years and he joined Chesterfield Tube, where he was in charge of the construction and development department, some 10 years ago.

Former secretary and director of the Chesterfield Tube Company, Limited, Mr. JOHN WILLIAM WINN SINDLE, has died at the age of 81. He joined the company, a member of the Tube Investments, Limited, group, from a firm of accountants and was appointed secretary in 1923 and a director in 1944. He retired 10 years ago, but continued in an advisory capacity.

The death has occurred of Mr. A. E. MACHEN, who retired from the chemicals sales department of Newton, Chambers & Company, Limited, Thorncliffe, near Sheffield, in 1953 after 57 years' service with the company. He was the son of a manager of Thorncliffe Colliery and spent his early working days in the secretary's department of Newton Chambers. He joined the outside sales staff in 1910 and retired from the consumer sales department in 1947, but stayed with the firm in a special capacity.

David Brown (Tractors) Reports Record Year

"MOST successful year in the company's history" has been reported by David Brown (Tractors), Limited. Production at the Meltham, Huddersfield, factory, where the labour force has been increased by 20 per cent., is likely to exceed the 1959 output by more than 40 per cent. This coincides with the 21st anniversary of the introduction of the first David Brown tractor in 1939 and with the centenary of the parent company.

Exports have accounted for 80 per cent. of output so far this year. Further expansion is planned for the coming year.

Brighter Prospects for West Midlands NCB

FURTHER reduction in November in the loss of men from the pits is reported by the West Midlands Divisional Board. Total employed on November 26 was 43,110. This was 154 less than on October 29. Of these 54 retired making a net loss of 100 men, which compares with an average net loss of about 450 a month over the year.

This development was accompanied by record productivity. Overall output per manshift was 29.17 cwt., a record for the division. The North Staffordshire Area established a record for both OMS at the face (100.65 cwt.) and overall (29.35 cwt.) and in the week ended November 26 achieved a face OMS of 103.5 cwt.

The Canock Chase Area also had a record face OMS in November of 93.39 cwt., while the South Staffordshire and Shropshire Area made a record overall OMS of 27.55 cwt. Coal stocks held by the board on November 26 were 2,276,000 tons, a reduction of 175,000 tons in the month.

South Wales Urges Rejection of NCB Shorter Hours Offer

CUT of 15 minutes on the working day which has been suggested by the National Coal Board and approved by the national executive of the National Union of Mineworkers has been rejected by the South Wales Area of the union. The NUM originally asked for a 30-minute cut which the National Tribunal reduced to 12 minutes. The NCB then agreed to a 15-minute reduction provided any claims for loss of earnings were decided locally between the management and the union.

On Monday, the Yorkshire Area of the NUM recommended the national executive to accept the board's offer. Scottish miners, however, have rejected the proposal.

PAY INCREASE SOUGHT BY EIRE MINERS

CLAIM for a wages increase for 389 workers employed in the Deerpark mine of Castlecomer Collieries, Limited, Castlecomer (Co. Kilkenny), Eire, was heard by the Labour Court in Dublin last week. Mr. N. Boran, for the Irish Transport and General Workers' Union, said the men sought an increase of 15s. a week for fillers, belt shifters, cutter men, and stone men, and 30s. a week for all other employees receiving less than 35s. a shift.

Mr. Boran said he "would not labour the court with arguments about the inadequacy of £6 6s. as a wage rate under present living conditions."

Mr. J. O'Connell, for the Federated Union of Employers, said that from the opening of negotiations the managing director had made it clear that the collieries were not in a position to meet any wage demand. Since the last increase was granted, the company had sustained heavy and continuous losses.

The court will issue its findings later.

Company News

UNITED STEEL'S 3 PER CENT. RISE

Rights Issue to Raise £10,000,000

HIGHER final dividend, a sharp increase in profits, a one-for-three rights issue to raise £10,000,000, plus a one-for-four scrip issue are announced by the United Steel Companies, Limited. A final dividend of 12 per cent. is being recommended, making a total of 18 per cent. for the year, against 15 per cent. previously. Trading profits showed a rise of 30 per cent., at £22,922,000 (after depreciation of £4.754,000), and were thus in line with the half-yearly indications and with the recent news of a 27 per cent. rise in the company's steel output.

Net profits after tax and various other charges rose by 34 per cent. to some £11,400,000 making earnings for ordinary dividend 62 per cent. on the present £30,000,000 capital, as against 46 per cent. last year. The terms of the rights issue are one new £1 ordinary share for every three held on December 16, payable in full on January 25.

The new shares will rank for an interim dividend of 6 per cent. now forecast, and the £10,000,000 raised in this way will presumably go towards the £32,000,000 expansion plan announced last April. The scrip issue on a one-for-four basis will be next July, and all shares will rank for a final dividend of "not less" than 7½ per cent.

WEARDALE LEAD COMPANY, LIMITED—Dividend for the year ended September 30, 1960, is raised to 12½ (7½) per cent. Net profit after tax was £16,205 (£4,513).

M. L. ALKAN, LIMITED, manufacturers of chemicals, anodes, and polishing materials, of Greenford (Middx)—Final dividend of 15 per cent. makes 22½ (15) per cent for the year ended September 30, 1960.

MORTIMER ENGINEERING COMPANY, LIMITED—A parent company, Mortimer Machine Tool Company, Limited, has been formed with head offices and showrooms at Mortimer House, Acton Lane, London, N.W.10.

DAVID BROWN CORPORATION, LIMITED—Consolidated profits of the group recovered sharply to £756,492 (£167,598) in the year ended June 30, 1960. As in previous years there is no dividend on the £1,000,000 ordinary capital.

ELSON & ROBBINS, LIMITED, spring makers and assemblers, of Long Eaton (Notts)—Final dividend of 10 per cent. makes 17½ per cent. for year ended September 30, on capital trebled by scrip issue (equivalent 16¾ per cent.).

BROOK MOTORS, LIMITED—Final dividend of 20 per cent. makes 25 per cent. for the year ended September 30, 1960, on a capital increased by a one-for-six scrip issue. Group net profit was £356,484 (£297,657), after tax of £325.433 (£274,779).

BRITISH BELTING & ASBESTOS COMPANY, LIMITED—Interim dividend of 6¼ per cent. is to be paid on account of 1960, compared with 5 per cent. forecast in the June offer for sale when a total dividend of 15 per cent. was expected for the year.

PLESSEY COMPANY, LIMITED—The offers to acquire the ordinary and preferred ordinary shares not already owned in the Garrard Engineering & Manufacturing Company, Limited, have been accepted in respect of over 90 per cent. of both classes and have now been declared unconditional.

R. A. LISTER & COMPANY, LIMITED, agricultural, electrical, and general engineers, of Dursley (Glos)—Final dividend of 9 per cent. maintains the dividend at 14 per cent. for the year ended September 30, 1960, on a capital increased by a one-for-six rights issue.

LONGMORE BROS., LIMITED—Despite difficulty in obtaining basic raw materials, a marked increase in turnover has been achieved. Net profit, after tax, is £127,548, exceeding the 1959 figure by £40,114. It is proposed that ordinary dividend be raised to 30 per cent., less tax.

WRIGHT BINDLEY & GELL, LIMITED, manufacturers of metal pressings, etc., of Birmingham—Net profit in the year ended October 1, 1960, was £48,257 (£23,766), after tax of £45,224 (£11,074), and the dividend is raised by the equivalent of 5 per cent. to 15 per cent. on a capital doubled by a scrip issue.

PLESSEY COMPANY, LIMITED—Group profits, before tax, rose from £2.236,119 to £4.300.884 in the year ended June 30, 1960, and the dividend is 15¼ (13) per cent. At the time of the one-for-two rights issue it was hoped to maintain an annual 17 per cent. rate on the increased capital for 1960-61.

WILLIAM BAIRD & COMPANY, LIMITED—Interim dividend of 4 per cent. is to be paid on account of the year ending December 31, 1960. A 3 per cent., tax free, distribution of capital profits is to be made out of the surplus on realization of fixed assets. Of this, 1 per cent. will be paid with the interim and 2 per cent. with the final dividend.

YORKSHIRE TAR CORPORATION, LIMITED—Group net profits in the year ended June 30, 1960, rose from £81,767 to £135.621, after tax of £186.193 (£162.603). The dividend on the "B" ordinary shares is 10 per cent. while holders of ordinary "A" shares will receive a 10 per cent., tax free, capital distribution. Both classes are privately held.

OXLEY ENGINEERING COMPANY, LIMITED—The chairman and managing director, Mr. S. Stansfield, states that intense competition continued unabated during the year ended June 30, 1960, and resulted in lower profit margins. As a result of delays in the delivery of steel from the mills, he says, there is a tendency for the production programme to be retarded.

HEENAN GROUP LIMITED—The entire share capital of Freeman Taylor Machines, Limited, Syston, near Leicester, has been acquired for £247.000, paid in cash from group resources. Freeman Taylor specializes in

the design and manufacture of stainless steel plant for the dyeing of textiles, and of stainless steel equipment for food processing, chemicals, and heat transfer.

J. & H. B. JACKSON, LIMITED, metal merchants, of Coventry—Both profits and dividend exceed the forecasts made when the shares were introduced on the Birmingham Stock Exchange in June. The final dividend of 15 per cent. compares with a 10 per cent. forecast and makes 25 per cent. for the year ended September 30, 1960. The profit was £77,224 (£67,824), subject to tax of £36,558 (£33,600).

ARTHUR LEE & SONS, LIMITED, manufacturers of strip steel, bright drawn bars, wire, and stainless steel, of Sheffield—Final dividend of 7 per cent. and a bonus of 2½ per cent. raises the final dividend by the equivalent of 4½ per cent. to 13½ per cent. on a capital doubled by a scrip issue for the year ended September 30, 1960. Group net profit rose to £810,336 from £432.458. after tax of £898,990 (£544,117).

JOHN HOLROYD & COMPANY, LIMITED, gear manufacturers, bronzefounders, etc., of Rochdale (Lancs)—There is a good order-book, states Mr. E. O. Liebert, the chairman, and unless there is a "sudden and distinct change in the climate of things both at home and abroad" the company appears to be set for another good year. Group net profits for the year ended September 30, 1960, were £419,462 (£354,034).

SAUNDERS VALVE COMPANY, LIMITED—Interim dividend is unchanged at 7½ per cent. and a one-for-two scrip issue is proposed. The new shares will rank for the final dividend for the year to March 31, 1961, but the directors state that it should not be assumed that the amount of future dividends will be affected by the issue. During the first half of the current year, orders and output were at a higher level than last year.

MIDLAND BRIGHT DRAWN STEEL & ENGINEERING COMPANY, LIMITED—The company is raising its distribution from the effective equivalent—excluding a special interim—of 25 per cent. to 40 per cent. for the year ending October 31, 1960, with a final dividend of 20 per cent. and a 5 per cent. bonus. Group trading profit increased to £492.709 (£336,060) and the net profit is up to £429,919 (£282,269), subject to tax of £216,050 (£146,435).

Stockton-on-Tees Locomotive Works to Close

BECAUSE of a decline in orders, the Metropolitan-Vickers-Beyer Peacock group, which is jointly owned by Associated Electrical Industries, Limited, and Beyer Peacock & Company, Limited, is to close its locomotive works at Stockton-on-Tees (Co. Durham) next February. About 324 men will be affected.

Lord Chandos, chairman of AEI, said on Monday that it was no longer possible to maintain the factory in continuous or profitable operation. Beyer Peacock's main locomotive works at Gorton, Manchester, was still working near capacity and further orders for another 50 main-line diesel locomotives were placed by the British Transport Commission a few weeks ago.

The manufacturers of diesel locomotives had been very busy during the last few years under the impact of British Railways' accelerated dieselization programme, but this programme may be completed by 1963 and the rate of ordering is already falling off. Exports of locomotives have fallen from nearly 700 in 1956 to 439 in 1959.

Orders Placed

Costain To Work NCB Open-cast Site

FURTHER contract has been awarded to Richard Costain Limited, London, S.E.1, by the National Coal Board Opencast Executive, valued at over £7,000,000 for the recovery of approximately 6,000,000 tons of raw bituminous coal from the Westfield Site (Fifeshire).

The contract covers only the first stage of the development of the mine which is estimated to contain between 20,000,000 and 25,000,000 tons of coal. The work includes the blending, washing, and grading of the coal at the mine and delivery of the finished product into railway wagons at a rate of 12,500 tons a week. This, it is estimated, will take six years to complete.

HIGH VACUUM BRAZING FURNACE, worth more than £7,500, has been ordered from Vacuum Research (Cambridge), Limited, by the Admiralty.

SUB-CONTRACT worth £250,000 for stabilizing the base of a road in Nigeria has been awarded to the Cementation Company, Limited. Specialist "single pass" equipment will be shipped from the UK to Nigeria.

GERMAN combine harvester manufacturer, Gebrüder Glaas Maschinenfabrik, of Harsewinkel, has placed orders totalling more than £1,000,000 with Perkins Engines, Limited, Peterborough, including a substantial order for the new Perkins Six 354 agricultural diesel engine.

ORDER FOR two 2-level Wigan type 40 shaft signalling indicators systems for installation at Blidworth Colliery, Edwinstowe (Notts), have been placed with Heyes & Company, Limited, Wigan, by the East Midlands Divisional Coal Board. Similar systems have already been supplied to Parkside, Arniston, Choppington "B," Agecroft, Pye Hill, Mosley Common, Askern, Kingsbury, and Preston-links collieries.

CIRCULATING-WATER PUMPS for the Rooiwal power station, in South Africa, have been ordered from the South African agents of W. H. Allen Sons & Company, Limited, Bedford, by Pretoria City Council. The contract is valued at £104,751 and is for three 54-in. horizontal-spindle double-suction pumps with 1,150 h.p. driving motors and associated valves, pipes, and auxiliary equipment. Consulting engineers are Merz & McLellan, London, S.W.1.

Delta Consolidates Non-ferrous Metal Production

FOLLOWING the recent disposal of its copper alloy tube production to Yorkshire Imperial Metals, Limited, Delta Metal Company, Limited, is consolidating various departments concerned with the manufacture of drawn brass wire strip and sections, high conductivity copper, phosphor bronze strip, and similar products. These departments will, in future, operate under the name of Heaton & Dugard, Limited, Argyle Street, Birmingham.

Mr. George Meredith has been appointed sales director of Heaton & Dugard, Limited, in consequence of which James Booth Aluminium, Limited, has agreed to release him from his present duties as sales director with effect from December 31, 1960.

NEWS IN BRIEF

AUSTRALIA last Friday lifted a 22-year-old embargo on exports of all but high-grade iron ore.

THE Metal Box Company Overseas, Limited, is to set up the Metal Box Company of Trinidad, Limited, with an authorized capital of WI$2,500,000.

AN ISSUE to all the main technical colleges throughout Britain of service manuals covering the company's current radio and television range is to be made by Philips Electrical, Limited, London, W.C.2.

AFTER 15 months of strikes, negotiations, and bloodshed, during which one man was killed and 1,263 were injured, miners in the Japanese Mitsui Miike colliery returned to work on Thursday of last week.

THE Mayor of Chatham, Ontario, recently opened the new $250,000 production plant of the newly-formed company, Parkinson Cowan (Canada), Limited. It is the first factory to be opened by Parkinson Cowan, Limited, in Canada.

DURING OCTOBER the number of people employed in engineering and electrical goods manufacture rose by 9,000. The mining and quarrying industries lost 2,000 men and the metal manufacturing industries gained the same number.

CUTLERS' ARMS public house was formally opened on Tuesday by Mr. Gerald Young, senior warden of the Company of Cutlers in Hallamshire. It is the first time that the company has given its permission for its arms to be used as an inn sign.

THIS YEAR'S British Institute of Foundrymen's award for patternmaking was presented to Mr. Colin Ruff (21) at the weekend for his success in the City and Guilds examination. He has been an apprentice with International Combustion, Limited, Derby, for six years.

CRUDE STEEL PRODUCTION in west Germany in November totalled 2,900,000 tons, bringing output since January to 31,400,000 tons. A slight fall in production compared with October was due to the shorter month. Output per day was fractionally higher.

NEW COMPANY is being formed in India by Head, Wrightson, Limited, to handle its expanding interests there. The formation of Head Wrightson India, Limited, is a first step in strengthening the company's participation in India's development, the parent company states.

BIRMINGHAM iron and steel scrap merchants, N. Perks, Limited, held an "open-day" at its new premises in Cheapside, on Wednesday. An electrically-driven oil-hydraulic press at the £100,000 works can produce bales of pressed steel waste at a rate of one a minute for 24 hours a day.

AUSTRALIAN SUBSIDIARY of the General Electric Company, Limited, British General Electric Company, Pty, Limited, recently celebrated its 50th anniversary. Founded in Sydney in 1910, it now employs some 1,500 people at its factories in New South Wales, and has branches throughout Australia.

THE Ickles Cottage Trust, which provides homes for former employees of Steel, Peech & Tozer, branch of the United Steel Companies, Limited, opened 11 new four-roomed cottages in Bawtry Road, Brinsworth last Friday. They were handed over by Mr. C. Innocent, the works labour manager, and chairman of the Cottage Homes Trust since its inception.

OXYGEN STEELWORKS with an annual capacity of 1,800,000 tons of crude steel, and also a strip mill is to be built at Huckingen, in the Ruhr, by Mannesmann, AG, Hüttenwerke. The new mill is intended to produce primarily tube strip, with provision for plate and flat billets. Corresponding obsolete crude steel and rolling equipment will be taken out of production.

LOAN OF $25,000,000 has been made by the World Bank to Norway for the further financing of the Tokke hydro-electric development scheme. The largest hydro-electric power project in Norway, the Tokke undertaking will consist of three power plants having a combined capacity of 810,000 kW.

FASTER RADIOGRAPHIC examination of steel welds in nuclear reactor pressure vessels will be possible with a new type of linear accelerator, designed by Mullard, Limited, which has just been delivered to the UK Atomic Energy Authority. The machine will be able to work on the construction site.

MEDIUM SECTION MILL built by Schloemann, AG, Düsseldorf, for the Société Métallurgique Hainaut-Sambre, SA, Couillet, Belgium, was recently put into operation. The new section mill is laid out to roll rounds, squares, flats, angles, channels, and beams, in addition to parallel-flanged beams.

BECAUSE OF SHORTAGE of skilled labour, Towler Bros. (Patents), Limited, makers of hydraulic pumps and valves, of Leeds, is to run a special shift three days a week for old age pensioners. The firm has advertised for fit men over 65 to work three evenings a week—a total of 8¼ hours—at 5s. an hour.

EXHIBITION of photographs showing a wide range of operations in the heavy engineering field by Head, Wrightson & Company, Limited, was held at the company's London offices on Wednesday. The photographs were taken by Mr. John Jochimsen during a recent visit to the company's works and foundries.

AT A MEETING between the Scottish Tube Makers' Association and the trade unions on Monday wage increases were agreed for employees in the Scottish tube industry. As from December 4, men of 20 years and over will get 9s. a week more; men from 18 to 20 will get 5s. 3d.; boys under 18, 3s. 9d.; and women, 6s. 9d.

TO EXAMINE the employment situation at the Belfast shipyard of Harland & Wolff, Limited, where it is estimated about 7,000 men will be laid off in the first half of next year, the Minister of Transport, Mr. Ernest Marples, spent three hours at the yard on Monday inspecting the departments and talking to workmen.

WITH THE December 1 issue of App-Frod Record, the works newspaper of the Appleby Frodingham Steel Company, branch of the United Steel Companies, Limited, the paper celebrates its 10th birthday. Since 1950, 393 issues have been published and the paper is now bought by 5,000 of the company's employees each week.

PARTY OF INDUSTRIALISTS, led by the Mayor of Wolverhampton and Sir Stanley Harley, president of the National Federation of Engineers' Tool Manufacturers, toured the factory of Marcome, Limited, metal processors, of Wolverhampton, on Thursday of last week as part of the celebration of the company's 25th anniversary.

FIRST MINING Bill ever drawn up in Hungary has been accepted by the Hungarian Parliament. It stresses the role of safety and economy in mining, and "embodies the principle that the greatest value is man, and that mineral raw materials are social property." The Bill aims at preventing "plunder mining," insists on higher training in certain fields of

work, and provides for more technical development, shortening of working time, easing work through mechanization, improving work and plant organization, and concentration of investment.

SPENCER STEELWORKS of Richard Thomas & Baldwins, Limited, at Llanwern (Mon) may not be ready to begin production in October, 1961, as planned. Announcing this, Mr. Henry F. Spencer, managing director, said that heavy rain and other causes such as industrial disputes, had delayed the construction work at the plant.

WHOLLY-OWNED SUBSIDIARY has been formed by Constructors John Brown, Limited, to take over its automatic control division. The role of the new Automatic Control Engineering, Limited, will continue to be that of an independent engineering service supported by a research and development team for the provision of efficient and economic instrumentation and automatic systems.

COAL would be an important source of national wealth, certainly during their lifetime, pupils of Oakwood School for Boys, Rotherham, were told by Mr. H. L. Tolley, staff training officer of the North-Eastern Divisional Coal Board, at the annual prize giving. "We are an expanding division, with a wide variety of jobs for good men. None of our activities is declining in any way," he said.

COAL STOCKS in West Germany now total 12,530,000 metric tons, compared with 12,900,000 tons at the end of October, and are at their lowest for two years. In France, stocks are increasing by 2.3 per cent. each month and by the start of last month totalled 13,276,000 tons. In the European Coal and Steel Community as a whole, stocks at the end of October—about 29,515,000 tons—were the lowest since April last year.

ENGINEERING INDUSTRY had had a long run—25 years—of good business, but engineers could not be complacent, said Mr. John Baker, vice-chairman of the Leeds Association of Engineers, at its annual dinner on Saturday. The Lord Mayor of Leeds, Ald. Mrs. Lillian Hammond, wished more women might qualify as engineers. Other speakers included Mr. A. Rose, president of the Leeds District Branch of the Institute of Welding; Mr. G. M. Butler, joint managing director of Butler Machine Tools, Limited; and Mr. G. A. Aldred, the association's chairman.

Transformer Manufacturers to Revise Prices

SOME new price schedules are to be brought into force next month by the Transformer Manufacturers' Association, Mr. A. R. Kevan, of the transformer tendering department of the English Electric Company, Limited, said in the Restrictive Practices Court last Friday. It was the association's intention to have a recosting about every three years, he told the court, which is considering whether the association's price-fixing agreement is in the public interest.

A suggestion by Mr. J. Megaw, QC, for the Registrar of Restrictive Trading Agreements, that the association had taken advantage of its power of combination to keep up prices where it would have been proper and reasonable to reduce them, was refuted by Mr. R. M. Hobill, general manager of the transformer department of Ferranti, Limited, who replied: "I don't think it has taken unfair advantage. The object of the association is to maintain prices and to maintain profit levels."

Room at the Top at United Steel

IT was the aim of the United Steel Companies, Limited, to train every employee as a future managing director, Mr. T. S. Kilpatrick, director and general manager of the Steel, Peech & Tozer branch, told apprentices at a prize giving on Thursday of last week. "Some of you who have not had a haircut for the last 11 months can work up to top management with us," he said.

"We have no limit in United Steel to where young people can go. We have no top drawers which are barred to brains, enthusiasm, hard work, and intelligence and the encouragement is there for you to reach the top." He went on to say that industry, the machinery which was installed, and the techniques it employed, were becoming more complicated. The firm was going to demand a higher and higher degree of sheer skill.

Mr. H. Winder, the education officer said that 72 per cent. of students at the works sucessfully completed their studies. Six apprentices had gained technical state scholarships out of 200 for the whole country and examination successes this year totalled 288. Nearly three quarters of all Steel, Peech & Tozer apprentices reached the Higher National Certificate or the City and Guilds final. He also announced that a new education and training centre would be completed at a cost of £245,000 by the autumn of 1962.

Edgar Allen Executives Visit Russia

AN eight-day visit to Russia started yesterday (Thursday) for Mr. W. J. McBride, a director of Edgar Allen & Company, Limited, steelmakers, of Sheffield, and general manager of the company's engineering division, and Dr. A. D. Merriman, consultant to the engineering division.

Mr. McBride will lecture in Moscow to top Russian executives and technicians on the design and manufacture of cement plant and kindred equipment. Dr. Merriman will talk on some physico-chemical aspects of cement manufacture and on certain aspects of steel manufacture.

The visit has been arranged through the State Science and Technical Committee, USSR Council of Ministers, and is one of several delegations, each in different engineering and technical fields, for whom visits have been arranged by the committee, to appropriate industrial plant in and around Moscow and Leningrad.

New £25,000 Works for Wedgwood Foundries

NEW £25,000 non-ferrous foundry for Wedgwood Foundries, Limited, were opened at Ravensdale, Tunstall (Staffs), recently by Mr. James F. Dowell, president of the Stoke-on-Trent section of the Institute of British Foundrymen. The works, which have been built to replace the company's original premises at Talke Pits, Stoke-on-Trent, are now in production.

Mr. Edward Smith, managing director, who was accompanied at the opening by Mr. R. S. Lovatt, director and secretary, said that moulding and core-blowing machines and shotblast equipment had yet to be installed in the new foundry.

FBI's Five-Year Plan for Rating Bill

EXPRESSING opposition to the new Rating and Valuation Bill, published recently, the Federation of British Industries maintains the Bill will result in hardship to many industries, particularly those with heavy fixed plant and machinery. In these cases it may hinder the investment which economic progress demands.

Main effect of the legislation will be to withdraw the 50 per cent. relief for industry. At present industry and freight-transport are rated at 50 per cent. of their 1956 rental values, the proportion having been increased from 25 per cent. in 1959.

Chief objection of the FBI is that while the main purpose of the Bill is to produce the same basis of valuation for all properties (except agriculture) it enables the Minister to give relief to householders, and householders only, where he considers hardship will arise. The FBI claims that, if relief is justified for householders, it is equally so for industrial firms.

The FBI has, therefore, suggested to the Minister, among other things, that the present 50 per cent. derating of industry should be tapered down between 1963 and 1968 and ended in 1968, on the same principle as that adopted by the Minister for scientific societies.

Parkinson Cowan Merge Two Divisions

TWO of the operating divisions of the Parkinson Cowan, Limited, group—Parkinson Cowan Instruments, Limited, and Measurement, Limited—are to be unified for the purpose of "pursuing more efficiently the rapid growth of business now in prospect and to allow marketing efforts to be further concentrated," it was announced last week by Mr. H. P. Barker, group chairman.

The new division will now be known as Parkinson Cowan Measurement, Limited, and will be headed by Mr. C. H. Chambers, previously divisional manager of Parkinson Cowan Instruments, Limited. Products of the new division include metering and automatic control equipment, a range of specialized hydraulic pumps, and remote control and telemetering equipment.

TRADE-MARK FEES INCREASE

WITH effect from May 1, 1961, higher fees are to be charged for applications, registrations, and renewals of trade-marks, the Board of Trade has announced. These fees, which have remained unchanged since 1955, are being raised in order to keep in line with increases in administrative costs.

From May 1 it will cost £4 to apply for a trade-mark, twice the present fee. Registration will cost £4, as compared with £3, and renewals £6 (£5). The figures in 1905 were £1, £1, and £2 respectively. The Board of Trade announces that an opportunity will be afforded to anyone wishing to make representation against the increases.

SCHEME costing £750,000 to give the Leicestershire mining town of Coalville the best shopping centre of any town of its size in the country is likely to be started about the middle of next year.

Mr. E. H. Browne Answers NCB Critics

MISAPPREHENSIONS about some aspects of the coal industry were cleared up by Mr. E. H. Browne, deputy chairman of the National Coal Board, speaking at the annual dinner of the Coal Trade Benevolent Association in London on Monday.

MR. E. H. BROWNE

It was generally thought, he said, that the NCB had been invoived in huge financial losses—in fact the last published accounts for 1959 showed that it had earned profits of £212,000,000 over the last 13 years.

Unfortunately this had not been sufficient to cover payments in interest and taxation of £268,000,000. The board was financed wholly by loaned capital on which interest had been paid in full leaving a deficit of £56,000,000. This was on a turnover of about £9,000,000,000 and was less than the loss on the importation of American coal which the board had been compelled to carry during the period of scarcity.

The position would have been very different, Mr. Browne said, had the board not had to bear the burden of stocking in recent years, a policy now clearly demonstrated as prudent and necessary. During this year 6,800,000 tons would have been lifted from stock and the prospects were that during the current winter season the stocklift might well be about 10,000,000 tons and that by the end of 1961 further very substantial reductions would have taken place. By stocking, the board safeguarded the productive capacity of the industry; the stocks were now of crucial value in meeting demand; and the whole process of rationalization and adjustment of production to a rather lower level of demand had been accomplished skilfully.

It was sometimes said that the board had disregarded the human element. But the facts were that although annual output had been reduced by 30,000,000 tons and although nearly 100 collieries had been closed, the number of miners now redundant was less than 1,000, and many of these would soon find alternative work.

Referring obliquely to the possibility of methane being imported from the Sahara, Mr. Browne said it was true that there was a cloud on the horizon—or was it a desert mirage?—regarding gas, but today 95 per cent. of gas used in the country was made from coal. The demand for electricity was now 50,000,000 tons a year and this might well about double within the next 15 years. Whatever happened in the marginal markets, the coal industry would inevitably remain the main supply of energy in Britain. The contraction of the last two or three years had now been checked and disposals in 1960 would probably exceed 1959 by 10,000,000 tons.

Higher Profit Forecast by Metal Box

PROFIT before tax of the Metal Box Company, Limited, London, W.1, for the half year to September 30, 1960, at £4,400,000, is £822,000 greater than for the corresponding period of the previous year, which was adversely affected by the printing strike. The company is raising its interim dividend from the equivalent of 3.6 per cent. to 5 per cent. A one-for-six rights issue is to be made, and a final of 7 per cent. is intended on the increased capital making 12 (10.9 equivalent) per cent.

The directors state that profit for the year as a whole should be better than last year. Home markets continue to expand and the increasing impact of the company's research and engineering activities will enable it to obtain its fair share of those markets and, by the improvements effected, encourage a further growth of demand for products. Capital requirements to finance developments over the next three years at home and oversea are estimated to amount to about £25,000,000, of which half should be available from group resources. The remaining capital is to be raised by a one-for-six rights issue of some 3,620,000 ordinary £1 shares, and a further 300,000 shares will be offered at the same issue price to directors and employees.

Faster Rate of Industrial Growth Urged for UK

SPEEDING-UP in the rate of economic growth has been urged on the Government by a leading group of British industrialists, which has expressed dissatisfaction with the recent UK record in this sphere and suggested that it should be a declared policy to raise the average annual rate of expansion of total output from 2 to 3 per cent. This conclusion emerged from a conference attended by about 100 industrialists to consider the economic outlook for the next five years. Arranged by the Federation of British Industries, the conference was held recently at Brighton.

Among points made at the conference, which was attended by Sir Frank Lee, joint permanent secretary to the Treasury, was the suggestion that there should be more attempts at long-term assessment of expectations and intentions in individual industries. The example of steel was cited, where an independent board examines and co-ordinates expansion projects in the light of the demands likely to be made upon the industry. The creation of an export finance corporation was also urged.

CHARLES CARR, LIMITED, non-ferrous casting manufacturers, of Smethwick (Staffs)—Further trading loss for the current year, at least as heavy as that for the previous nine months, is almost inevitable, states Mr. E. C. Marsland, the chairman. Attempts to make up the loss of business resulting from British Railways' switch from white metal to roller bearings for its wagons, by expanding in the diecasting field have proved most disappointing. The restoration of the company's finances to a profit-making basis is a problem which can be dealt with only by the most drastic remedies.

Car Industry Recession "Not So Serious"

NOT so serious as it appeared on the surface was how Mr. W. D. Pugh, managing director of the English Steel Corporation, Limited, Sheffield, summed up the recession in the motor car industry. Mr. Pugh, who was speaking last week at the annual dinner of the firm's Foremen's Club, went on to say that the recession had had an effect on the dropforging, spring, and bar mills departments, but generally, it was slight. "But if it gets worse, it will affect everybody in time," he said, adding that he thought the motor industry could feel optimistic about the new year.

Of the firm's new plant being built at Tinsley Park, he said he hoped it would begin production by 1963.

During the evening English Steel's research director, Mr. T. R. Middleton, was installed as the new president of the club. Long-service awards were made by Mr. Middleton to 10 members.

WILLIAM SUGG ORDERS ARE DOUBLED

CURRENT orders were about doubled, and output had been stepped up by 25 to 30 per cent., Mr. W. T. Mattock, managing director of William Sugg & Company, Limited, engineers and non-ferrous founders, of London, S.W.1, told the annual meeting. The company was hoping at least to maintain the 30 per cent. increase in turnover.

Referring to the company's profit sharing scheme, Mr. Mattock said that this year the bonus was nearly four times as much as last, working out at 6½ weeks' pay for each employee. The company had also recently introduced sickness benefits, and had now decided to institute a redundancy scheme. Should circumstances occur which would lead to redundancy, any man with over five years' service would get a week's pay for every year in excess of five years.

Labour Position Affects Moss Gears' Trading

UNTIL the labour position improves, Mr. S. L. Duckitt, chairman of the Moss Gear Company, Limited, gear specialists, of Birmingham, is reluctant to make a definite forecast about the current year's trading results. New projects, too, are taking longer than anticipated and have not yet reached the expected profit-earning stage.

Inability to obtain the skilled labour essential for precision work was partly to blame for the difficulties experienced during the year ended July 31, 1960, and keener competition helped appreciably to lower the profit margins.

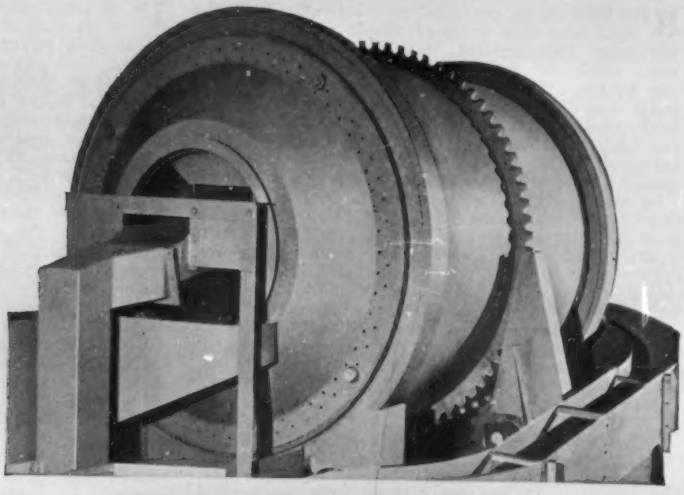
Net profits decreased to £140,930 (£235,566) in 1959-60. The dividend of 18 per cent. on a capital increased by a one-for-five scrip issue compares with the equivalent of 17½ per cent.

HIGH COSTS and slack trading conditions have forced three foundries in South Shields to inform the local corporation that they cannot, at present, afford to instal appliances to reduce the emission of smoke and grit.

clean coal

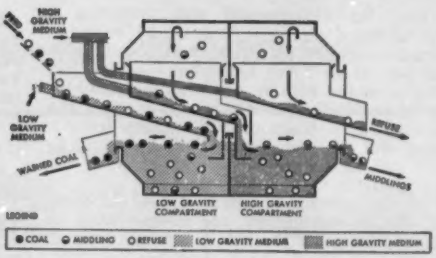
middlings

refuse



from ONE vessel

The WEMCO Two-Compartment Drum Separator is a single, slowly rotating vessel containing two individual heavy medium pools of different, and adjustable, specific gravities. The low gravity medium in one compartment separates a primary float product, the sink material being lifted and sluiced into the second compartment where middlings and true sinks are separated. With their associated equipment, these robust, hard-wearing units can be used to extend existing plants, or as part of new installations.



Other WEMCO equipment: DMS laboratory units. Coal spirals. Froth flotation cells. Densifiers and thickeners.

WEMCO®

DRUM SEPARATORS

WEST'S (MANCHESTER) LIMITED NORTON STREET · MILES PLATTING · MANCHESTER 10
Tel.: COLlyhurst 2132 Telegrams: Westman Manchester 10
London: Columbia House, Aldwych, W.C.2. Tel.: HOLborn 4108
CL22

Census of Production Results

RESULTS of the census of production for 1959, the first of a new series of simple annual inquiries following the detailed census taken for 1958, were published by the Board of Trade Journal last Friday. The new census collected information about only three items, the value of goods sold and work done, stocks and work in progress, and capital expenditure. It was based, not, as in the past, on the individual factory or workshop, but on a broader unit, usually a company or group of companies.

In metal manufacture (iron and steel) the results show a total fall during the year of £11,300,000, while work in progress also fell by £7,900,000. Stocks, however, rose by £1,700,000. The similar group for light metals, copper, brass, and other base metals showed a total increase of £6,200,000, work in progress was up by £4,000,000 and stocks also increased by £3,200,000. Mechanical engineering results also were good. The total rose by £4,800,000, with work in progress figures up by £6,300,000. Stocks, however, were down by £7,400,000. Electrical engineering showed a total increase of £57,500,000, work in progress was up by £24,500,000, with stocks increased by £6,500,000.

Capital expenditure figures (with adjusted figures for 1958 in parentheses) were as follow:—Metal manufacture (iron and steel), total, £111,700,000 (£128,200,000); new building, £14,800,000 (£18,000,000); mechanical engineering, total, £73,800,000 (£83,700,000); new building, £18,600,000 £23,300,000); electrical engineering. £56,700,000 (£55,300,000); new building, £16,100,000 (£17,100,000).

The estimates show that capital expenditure by manufacturing industries amounted to £855,000,000 in 1959, compared with £911,000,000 in 1958—a fall of 6 per cent. There were falls of 10 per cent. or more in the iron and steel, mechanical engineering, and the aircraft industry groups.

MP Foresees Return to Pre-war Conditions in Mines

BELIEF that the Government was preparing a scheme whereby each coalfield would be set a profit target was expressed by Mr. Roy Mason, Labour MP for Barnsley, at an "Any Questions" session last Friday. "More status will be given to the management whose responsibility it will be to see that the targets are reached. Each coalfield might have a different target and the management will be trying to keep up with and pass their targets and we shall see a return to pre-war conditions," he warned.

Speaking on the national agreement of £42 7s. compensation a year in lieu of coal for miners living in smokeless zones, Mr. Mason said he thought that it was a fair rate.

OVER 2,000,000 tons of crude steel were produced for the first time by Hüttenwerk Oberhausen, AG, the German steel company, in the year ended September 30, 1960. By next summer, annual capacity will be increased to 2,500,000 tons. The dividend for the year is increased from 10 to 12 per cent., bringing it into line with several other German steel concerns, all of whom have tended to keep their dividends in step over the years.

"Future in Electricity" for East Midlands Coal

IN 15 years' time, three quarters of the coal output of the East Midlands Divisional Coal Board will be used in power stations, it was stated last Friday, at the Nottingham inquiry into the proposal of the Central Electricity Generating Board to build a power station at Holme Pierrepont. Nottinghamshire County Council and other local authorities are objecting to the project on the main ground that the site is the least desirable of five alternative sites.

Mr. S. B. R. Cooke, QC, for the Electricity Board, said he wanted to refute a suggestion made at the inquiry that there would not be sufficient supplies of coal for the power station. He read from an article by Mr. W. Miron, chairman-designate of the East Midlands Divisional Coal Board, stating that the board hoped to increase its supply to power stations from 30 per cent. to 75 per cent. of output during the next 15 years.

The article said assessments made of the future market of the East Midlands Division showed that during the next 10 years the Electricity Board's requirements would jump from an annual 14,300,000 tons at present to 27 000.000 tons, and by 1975 the figure would reach 36,000,000 tons. "There is no doubt that here lies the division's ultimate tomorrow," the article added.

Laboratory Economies in Durham NCB Area

LABORATORY work in No. 6 (North-West) Area, Durham Divisional Coal Board, has been centralized in one laboratory on a site at the old Louisa Colliery, Stanley. Previously the work was carried out at three laboratories, originally operated by the old colliery companies, the accommodation at two of which was scattered.

Equipment from the three laboratories has been adapted and installed in the new premises, where the centralization of the work already has led to substantial economies.

Work of the scientific staff includes mine roadway dust samples (59,000 were taken in 1959); sampling and analysis of different grades of coals from 39 pits and drifts; airborne dust samples (26.000 in 1959); clays, building bricks, and firebricks; diesel exhaust gases (underground), etc.

Hawker Siddeley Plans New Turbine Range

PLANS to add to its existing range are announced by the Hawker Siddeley Group, Limited, at its Brush Turbines factory at Hucclecote (Glos). The plans include the making of turbines for tonnage oxygen plant and the chemical and petrochemical industries. The factory began production last year when Hawker Siddeley decided to centralize the manufacture of all industrial turbo-type products in one factory, after the company acquired the Brush Group, Limited, in 1957.

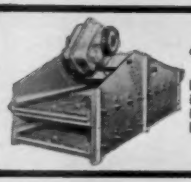
The company employs about 700 and works in conjunction with the Brush Electrical Engineering Company, Limited, of Loughborough (Leics).

You can't afford to be without

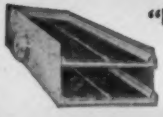
ALLIS-CHALMERS

Quality-built VIBRATING Screens

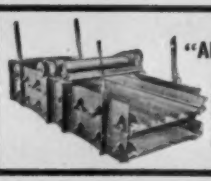
They're engineered to endure!



"LOW HEAD"
Horizontal or part inclined for installations with limited headroom.



"RIPL-FLO"
Ruggedly built inclined screen for normal or extra heavy duties.



"AERO-VIBE"
Light duty, inexpensive screen for specialised applications.

ALLIS-CHALMERS

ALLIS-CHALMERS · GREAT BRITAIN LIMITED

DEPT. I.R. · 728 SALISBURY HOUSE · LONDON WALL · LONDON · E.C.2.

CM/9A C8/4

Record Investment Level in ECSC

OVER the first half of the current year, it is reported from Luxembourg, investments totalling $1,216,000,000 have been registered with the executive of the European Coal and Steel Community. This compares with $525,000,000 for the second half of last year and is almost four times the average half-yearly investment level since 1956.

Of the grand total, $1,092,000,000 concerned the iron and steel production industry (compared with $379,000,000 over the preceding half-year), $118,000,000 ($114,000,000) the coal-mining industry, and $6,000,000 (nil) was for iron-ore mining.

Figures issued for the third quarter of 1960 show that investments in the iron and steel branch fell to $373,500,000, as against $595,400,000 in the first and $496,300,000 in the second quarter of the year, while coal investments fell to $12,800,000, by far the lowest level since 1956.

Within the steel industry, of the investments for the first half of 1960 some $550,000,000—or half the total—was concerned with rolled steel projects and a third of all expenditure with the production of ingot steel from pig-iron.

Figures on hand for the third quarter indicate an increase through projects registered over that period of 3,100,000 metric tons in the ECSC capacity for raw steel, 2,400,000 tons in sinter production, 140,000 tons for pig-iron, 910,000 tons for coils, 680,000 tons for rolled wire, 180,000 tons for light sections, 186,000 tons for cold-rolled wide strip, and 50,000 tons for galvanized sheet.

Sandvik Swedish Steel Opens Scottish Depot

NEW distribution depot of Sandvik Swedish Steels, Limited, steel and tool manufacturers, of Halesowen, Birmingham, was opened at East Kilbride, near Glasgow, last week. Designed to provide a speedier and better service to the firm's customers there, it is believed to be the first operation to be undertaken in Scotland by a Swedish company.

Sandvik Swedish Steels has been operating in the UK since 1868, when the parent organization, the Sandvik Steel Works, Sandviken, Sweden, first established its representation here. The new depot is at Blackbraes Road, Nerston Industrial Area, East Kilbride, Glasgow, and will be under the supervision of two Scots, Mr. A. S. Leggat and Mr. T. McNeilly.

New Marking Regulations for Shipments to India

HAVING converted to the metric system, the Indian authorities have agreed to accept shipments marked with weights in avoirdupois units until February 1, 1961. After that date the weights of each package or piece of freight must be marked in metric units on two sides and for pieces of over three tons the weight must also be marked on top.

Since this may not be possible in the case of certain cargoes, such as iron and steel, shippers should ensure that the metric weight is marked on a tab attached to the items.

German Steel Output Ahead of Deliveries

RAW steel capacity in West Germany, which last year stood at some 32,400,000 metric tons, has this year increased to 33,900,000 tons and is expected to rise to 34,700,000 tons by the end of 1961. In the current year national output, including Saar production, is expected to be at capacity level, whereas last year it totalled only 29,400,000 tons.

Order-books of the German steel industry, it is stated, at present contain contracts for 6,000,000 tons of rolled steel products. Nevertheless, over the past four months orders received have been, at a monthly average of 1,633,000 tons, lower by 92,000 tons monthly than averaged rolled steel deliveries.

The Dortmund steel producer, Hoesch, AG, recorded in the financial year ended September 30, 1960, output levels of 1,700,000 (1958/59: 1,400,000) metric tons of pig-iron, 2,300,000 (1,800,000) tons of raw steel, and 1,900,000 (1,500,000) tons of rolled steel. Hoesch coal interests produced over the same period 5,800,000 (6,000,000) tons from 937,000 tons to 644,000 tons and face productivity rose from 1,769 kg. per manshift to 2,070 kg.

Further US Credit for Argentine Steel Project

ARGENTINE steel concern, Sociedad Mixta Siderurgia (Somisa), which is engaged in constructing a steel plant in San Nicolás, announces it has been granted a further credit of $12,000,000 from the United States-based Export-Import Bank for the purchasing of spare parts and accessory equipment. The company already owes the Export-Import Bank $100,000,000 and suppliers $65,000,000. Investment to date, which covers the port and warehouse facilities, the coking plant, the power station, and one 600-metric-ton blast furnace, all of which are now completed, is estimated at $240,000,000.

The same amount again will be required for the plant's steelworks—bought from the German companies Ferrostaal, AG, and Didier-Werke, AG—the plate rolling mill, a tinplate unit, and two further blast furnaces. The difficulty of raising the extra sums necessary has caused the Argentine Government to draft a Bill under which a greater private participation in the scheme is foreseen.

Steel Expansion in the Ukraine

CONSIDERABLE expansion is reported from the steel industry of the Ukraine. Two new electric furnaces have been brought into commission at the Saporoshye steel plant, an extrusion plant at the Stalino plant has been completed, and construction has started of two Siemens-Martin furnaces at the Krivoi Rog works.

Some 21,700,000 metric tons of steel were produced in the Ukraine over the first 10 months of the current year.

MAUDE PIT (Northumberland) closed last Friday. The pit, which started production 88 years ago, was closed as uneconomic. None of the 640 workers at the pit was made redundant by the closure.